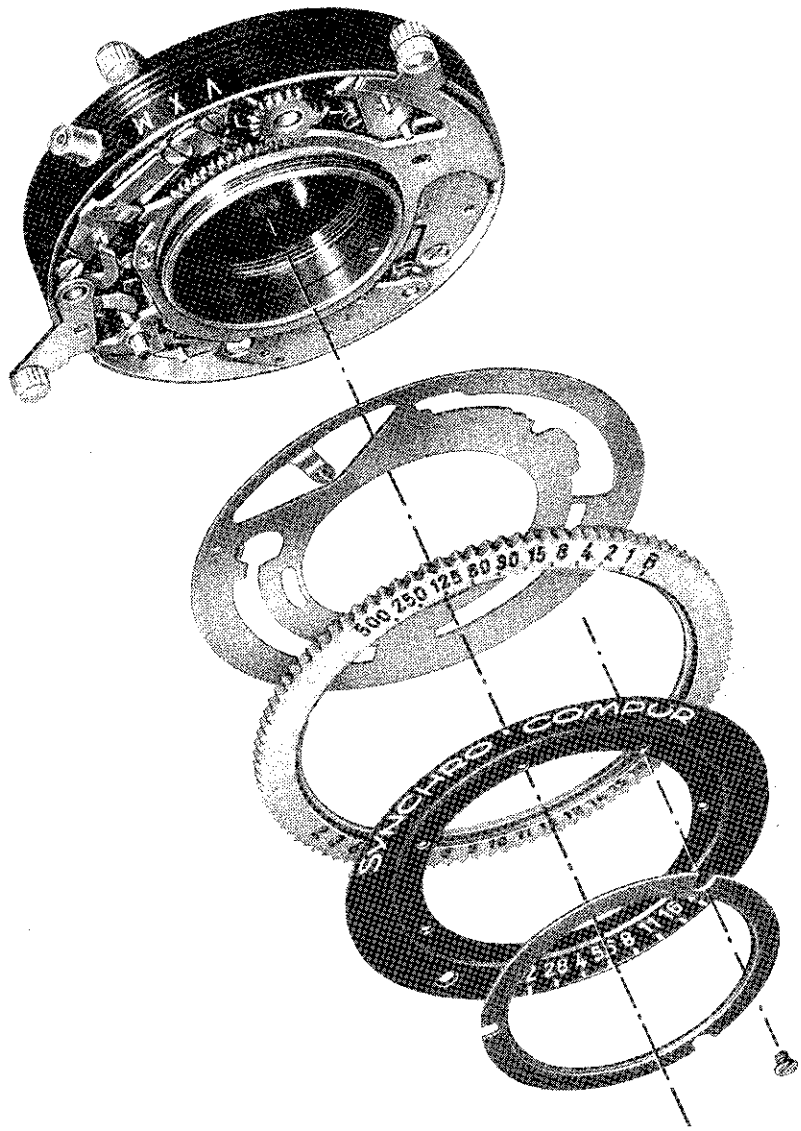
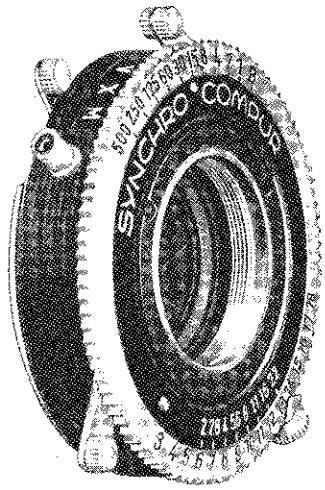
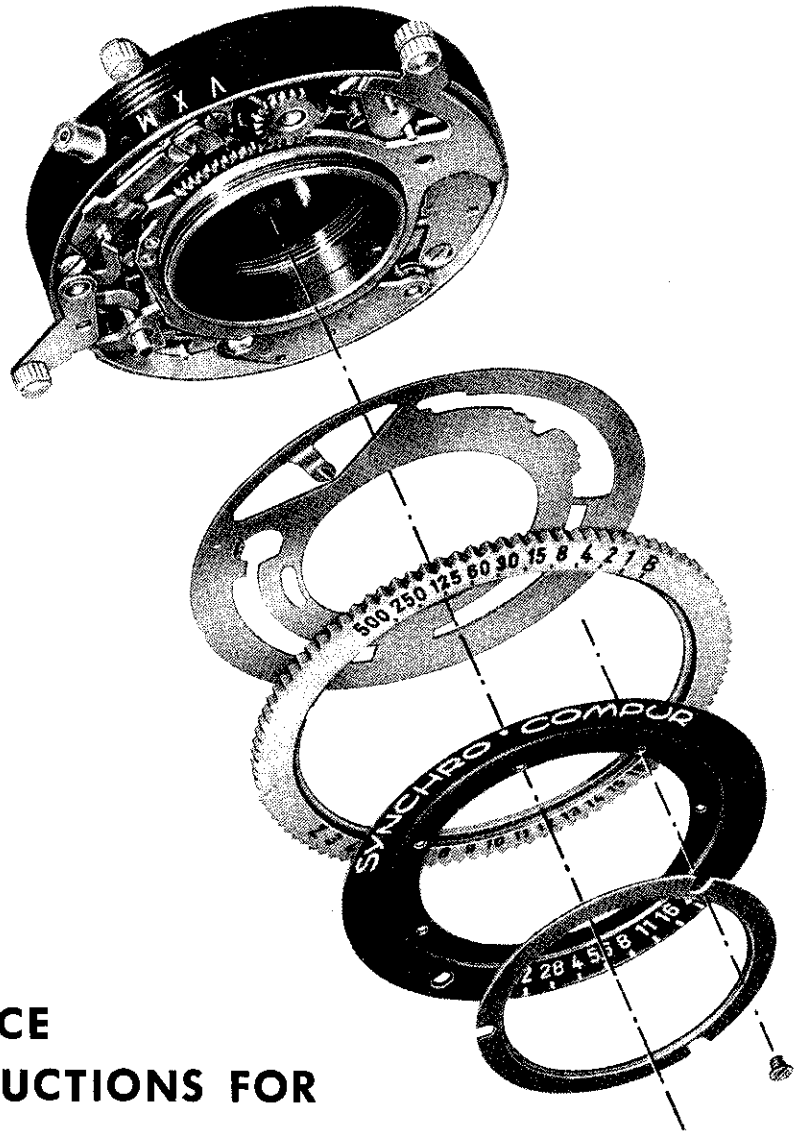


SYNCHRO-COMPUR SHUTTER

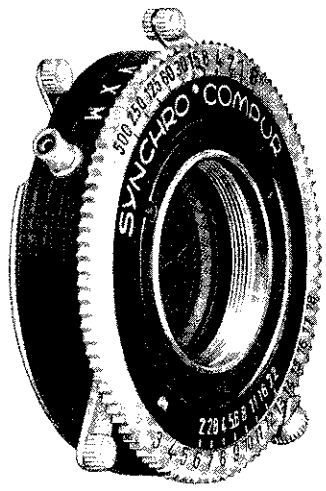




SERVICE
INSTRUCTIONS FOR

SYNCHRO-COMPUR SHUTTER

SERIES 1110-000



MARCH 1967

Honeywell PHOTOGRAPHIC PRODUCTS DIVISION
4800 EAST DRY CREEK ROAD • DENVER, COLORADO • 80217

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TABLE OF CONTENTS

Paragraph		Page
	SECTION 1 - INTRODUCTION	
1-1	Purpose	1-1
1-2	Shutter Description	1-1
	SECTION 2 - PRINCIPLES OF OPERATION	
2-1	General	2-1
2-2	Explanation of Functions	2-1
2-3	Description of Cocking Mechanism	2-2
	SECTION 3 - DISASSEMBLY	
3-1	General	3-1
3-2	Sequence of Disassembly	3-1
	SECTION 4 - MAINTENANCE	
4-1	General	4-1
4-2	Cleaning the Shutter	4-1
4-3	Lubricating Instructions	4-1
	SECTION 5 - ASSEMBLY AND ADJUSTMENT	
5-1	General	5-1
5-2	Assembly Sequence	5-1
5-3	Adjustment of Individual Components	5-4
	A. Exposure setting ring	5-5
	B. Cam ring	5-5
	C. Cocking pinion, cocking ring and drive	5-5
	D. Bridge with locking lever	5-6
	E. Escapement 300	5-6
	F. Shutter speed adjustment	5-6
	G. Self-timer 400	5-8
	H. Stop	5-8
	I. Blades	5-8
	J. M-cam check lever, M-anchor plate, M-detent lock, and V-detent lever	5-9
	K. Diaphragm segments	5-9
	L. Synchronization	5-9

Paragraph Page

SECTION 6 - SPECIAL INSTRUCTIONS FOR STANDARD 1110-010

6-1 General 6-1
6-2 Assembly and Adjustments 6-1
A. Diaphragm setting ring and diaphragm ring 6-1
B. Exposure control ring, shutter speed coupling ring and cam ring 6-1

SECTION 7 - SPECIAL INSTRUCTIONS FOR STANDARD 1110-019

7-1 General 7-1
7-2 Assembly and Adjustments 7-1
A. Cocking pinion, cocking ring and drive 7-1
B. Exposure control ring 7-2
C. Cover plate, exposure control ring and flanged intermediate ring 7-2
D. Assembly of light-value mechanism 7-2

SECTION 8 - SPARE PARTS LIST

8-1 General 8-1
8-2 Ordering Information 8-1
8-3 Symbols in Spare Parts List 8-2
8-4 Repair Instructions and Lubrication Schedules 8-2
8-5 Camera/Lens/Shutter Table 8-3
8-6 Spare Parts List Synchro-Compur O-MXV Cocking Ring 1110-000 . 8-4
8-7 Spare Parts List Synchro-Compur O-MXV Cocking Ring 1210-000 . 8-6
8-8 Spare Parts List for Special Shutters 8-8
8-9 Spare Parts List for Special Shutters Supplement Sheet 1 8-10

SECTION 1 - INTRODUCTION

1-1. PURPOSE

Detailed instructions for disassembling, cleaning, lubricating, and reassembling the Synchro-Compur shutter of the Rollei camera are given in this manual. All information contained in Sections 1 through 5 pertains to the 1110-000 shutter. Special information on the 1110-010 and 1110-019 shutters is provided in Sections 6 and 7. Instructions for adjusting various components of the shutter during the reassembling process are listed in Section 5. See Section 8 for a complete replaceable parts list.

1-2. SHUTTER DESCRIPTION

The Synchro-Compur shutter, used with the Rollei camera, provides shutter speeds from 1 second to 1/500 of a second, as well as B (Bulb). This shutter is synchronized for flash and includes built-in delayed action.

Figure 1-1. Synchro-Compur 1110-000 Shutter

SECTION 2 - PRINCIPLES OF OPERATION

2-1. GENERAL

Before disassembling and repairing the Compur shutter, the technician should familiarize himself with the functions of the shutter and cocking procedure. Refer to Figures 2-1 and 2-2 during explanation of the drive and cocking.

2-2. EXPLANATION OF FUNCTIONS

The following is an explanation of functions of the drive:

1. Opening tooth with edge.
2. Working edge for locking lever.
3. Closing tooth with ridge.
4. Braking latch with ridge and stop lip.

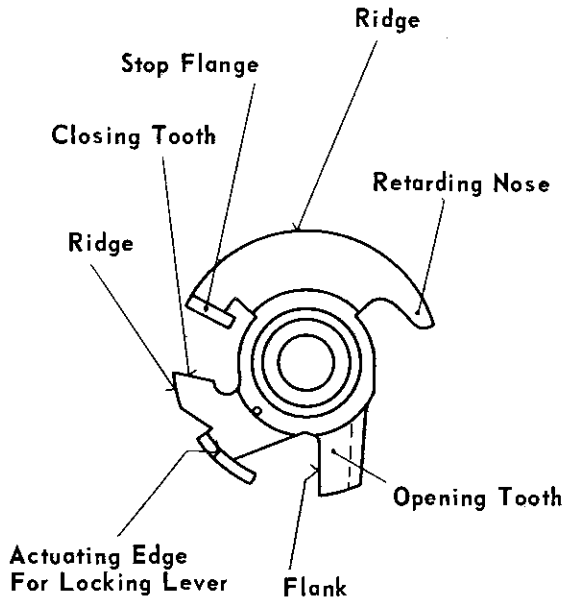


Figure 2-1. Drive

2-3. DESCRIPTION OF COCKING MECHANISM

The following describes the function of the cocking procedure. Refer to the Figures 3-1 through 3-10. These diagrams show the physical location of the components and the component part number.

A. Cocking Ring. Cocking ring 528 activates cocking pinion 517; in turn, the cocking pinion activates drive 514. (Also refer to Figure 2-1)

1. Function: The closing tooth releases sector ring 202. The sector ring is held then only by sector ring closing spring 249 (pin for sector ring closing spring). The opening tooth and ridge press opening pin downward. After the opening pin has been passed, it returns to the normal position. The locking lever simultaneously arrests the drive.

B. Setting Ring Position X: The latch of setting ring presses M-cam check lever 696 out of the way of sector ring 202 and supports M-contact lever 612.

C. Release Function: The release locking lever releases drive 514. The opening tooth presses against the opening pin of sector ring 202. This is a direction-open position.

M-detent 664 releases at this point, but moves without function. The braking edge presses against the escapement. During the escapement operation, the ridge of the opening tooth takes over the support of the sector pin. Simultaneously, the closing tooth of drive 514 returns the closing pin of the sector ring.

The drive locks the sector ring, and simultaneously, the stop lip of the stop on the mounting tube shutter closes.

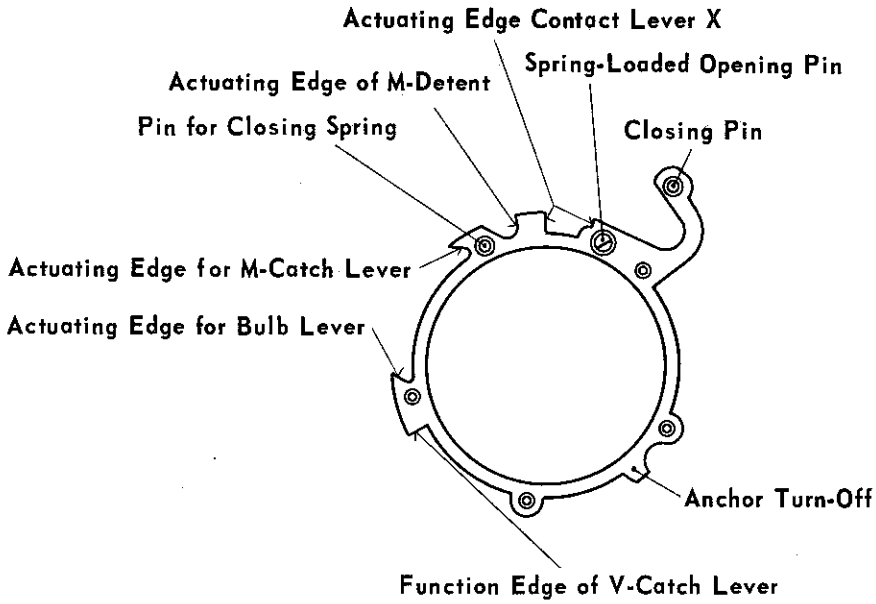


Figure 2-2. Sector Ring

D. Function X-Contact: X-contact lever 615 rests on M-contact lever 614. Release is the same as before. The working edge of the sector ring retracts the X-contact lever in the opening position of the sectors. (Contact is made.) Closing function is the same as previously described. The sector ring returns and the X-contact lever returns by its own (spring) force. This interrupts contact.

With the complete closing of the sector ring, the X-contact lever is retracted (complete separation of contact).

E. Setting Ring Position M-Contact: The M-cam check lever loses its support from the setting ring flange and falls in the way of sector ring 202. Simultaneously, the M-contact lever loses its support. The release function is as previously described above. The sector ring releases the M-detent lock. M-cam check lever 696 holds the sector ring. Simultaneously, the X-contact lever loses its support on the sector ring

(contact is made); the M-detent is released and presses the M-cam check lever out of the way of the sector ring. At the same time, the M-contact lever is being pressed out of function. The retracting force of the X-contact lever spring is now effective.

With full opening of the sectors, the X-contact lever is pressed against the contact by sector ring 202 (additional contact).

F. Closing Function: The sector ring is forced to return. The interruption of contact is achieved through its own spring tension. When the sector ring is completely closed, the X-contact lever is returned (complete contact separation).

G. Position "B": Cocking and releasing are accomplished as previously described. The shutter speed lever engages with the sector ring at full opening of the sectors. At the same time the anchor position of the escapement is 1/30 of a second. After the release has been deactivated, the shutter speed lever is moved out of the way of the sector ring and the shutter closes.

H. Self-Timer Mechanism: Turn setting ring in V position. The self-timer mechanism is being tensioned by the pin of the setting ring (cocking spring). The V-detent lever 421 is moved in the way of the sector ring 202 by the spring of cocking ring 528. During this movement, M-detent lever 635 is moved out of the way of the sector ring. M-contact lever 612 is supported by M-cam check lever 696. The M-cam check lever holds the setting ring flange with its back.

I. Release Function of the Self-Timer Mechanism: When released, drive 514 turns sector ring 202 in the V-detent position. M-detent 635 runs without function against the M-cam check lever which, in turn, releases the ratchet of the setting ring. The setting ring returns to the X position. Tension releases the V-lock. The self-timer mechanism runs, and the V-link pulls the V-detent lever out of the way of the sector ring. The shutter opening is the same as the X-contact position.

1. Three-Point-Adjustment

Sequence of arrest:

a. M-detent 664.

b. Opening pin.

c. Locking lever on bridge.

The adjustment must be made so points 1 and 3 coincide with position 2.

SECTION 3 - DISASSEMBLY

3-1. GENERAL

This section contains disassembly procedures for the 1110 Shutter for the Rollei camera. Figures 3-1 through 3-9 help in determining disassembly sequence and malfunction.

CAUTION

Disassemble the 1110 Shutter in a released condition only.

3-2. SEQUENCE OF DISASSEMBLY

Completely disassemble the 1110 Shutter before attempting any repair, cleaning or lubrication. The 1110 Shutter should be disassembled in the following proper sequence:

1. Lock screw 538 for retaining ring 547.
2. Retaining ring 547.
3. Cover plate with exposure setting ring, slotted cam ring and release lock, if provided.
4. Cocking pinion 517.
5. Cocking ring with spring 528/521.
6. Release lever 508
7. Main drive spring 515.
8. Drive cam 514.
9. Escapement 300 and self-timer mechanism 400.
10. Bulb speed lever with spring 669/151.
11. Two bridge screws 418/620.
12. Spring and bridge 672/621.

13. X-contact lever 615.

14. M-contact lever 612.

15. Spring (M-detent) 641.

16. Gear segment 635.

17. M-spur gear 632.

18. Gear segment lever spring 619.

Turn Shutter Over

19. Three diaphragm ring guide screws for diaphragm ring 120/108.

20. Diaphragm setting ring 150.

21. MXV setting ring 148.

22. Three casing screws 109.

23. Casing 101.

24. Remove shutter blades according to sequence.

25. Put base plate on assembly jig and remove two screws 201 from lens mount tube 204.

26. Lens mount tube 204.

27. Remove tension from sector ring closing spring 249.

28. Sector ring 202.

Disassembling Casing

29. Three screws 117.

30. Sector cover 116.

31. Turn casing over so that diaphragm segments and diaphragm cover fall out.

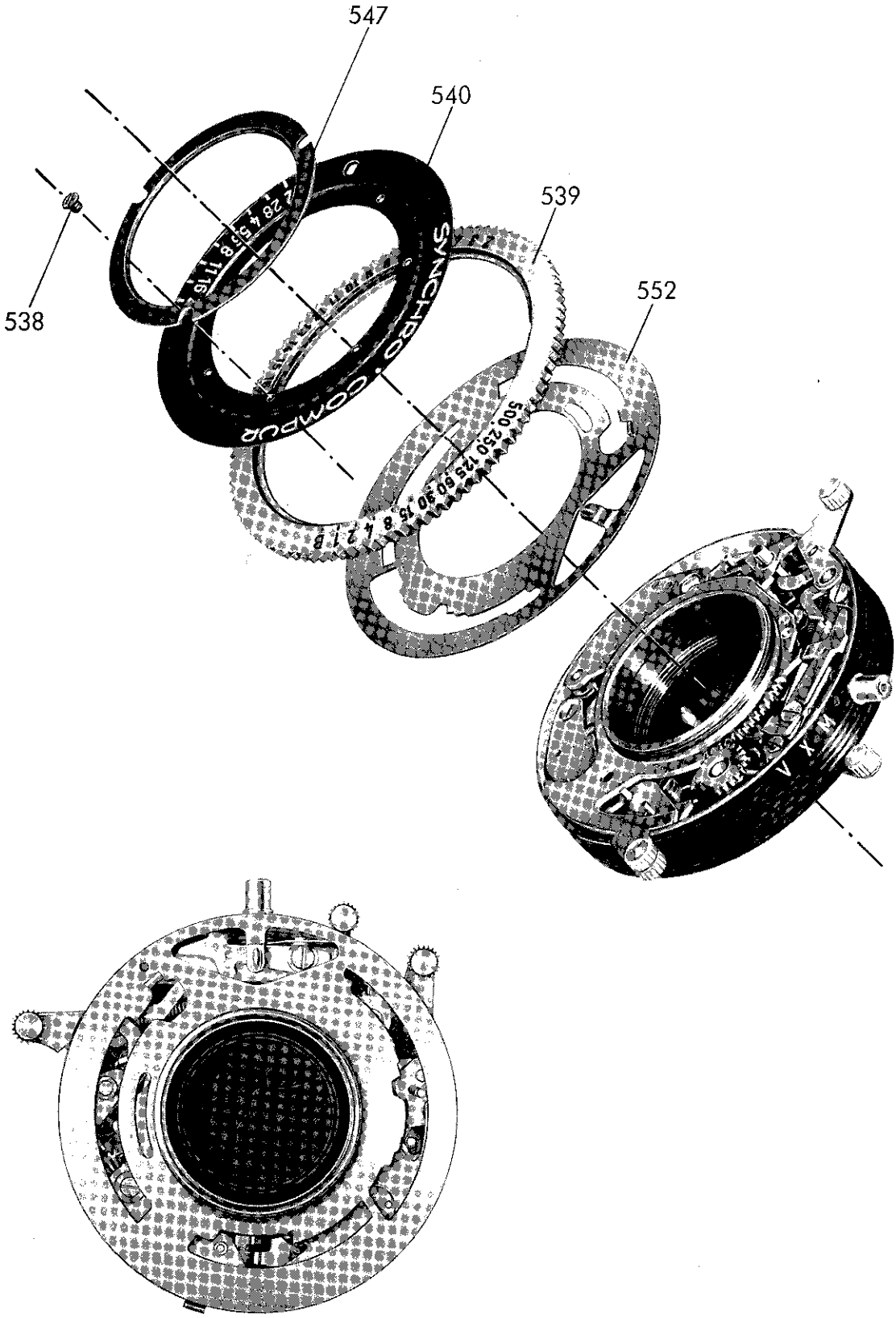
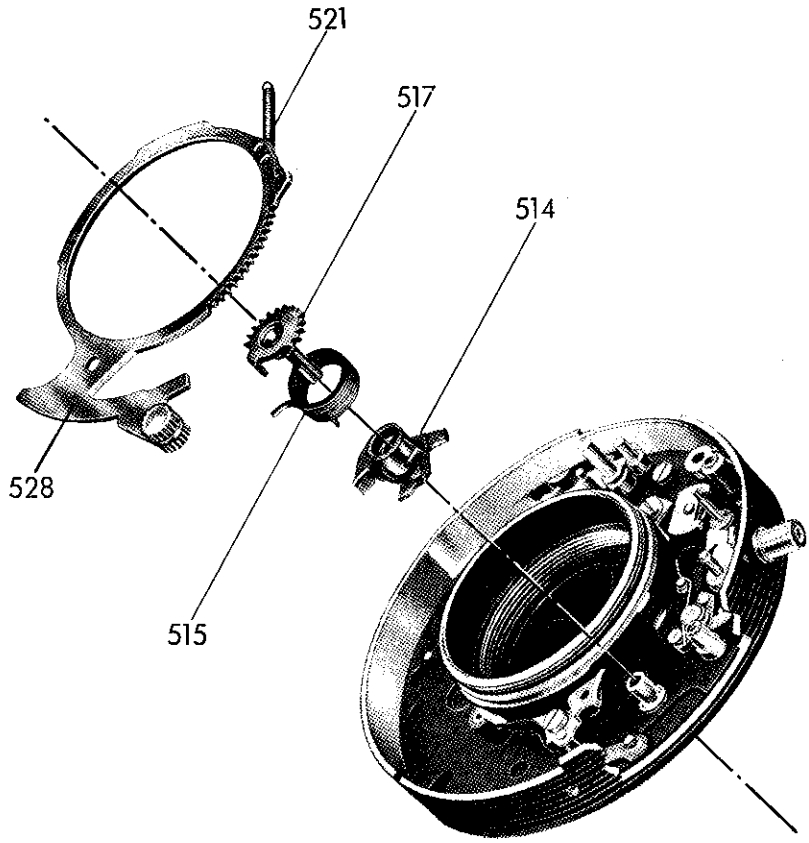
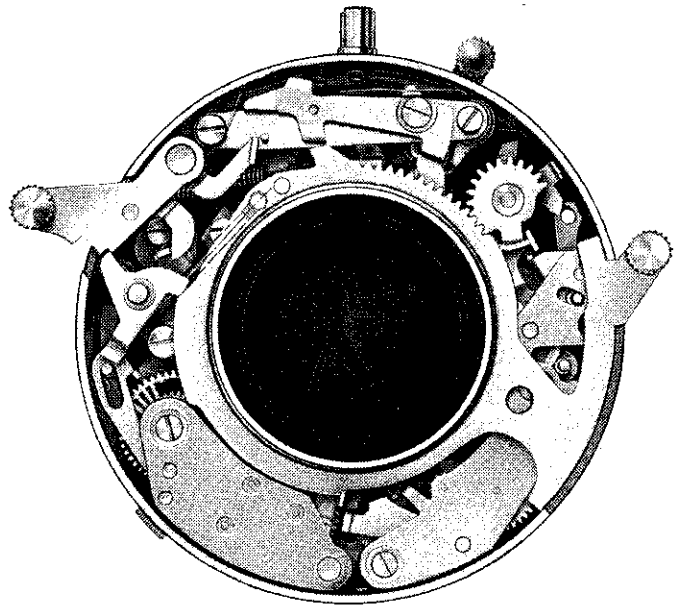


Figure 3-1





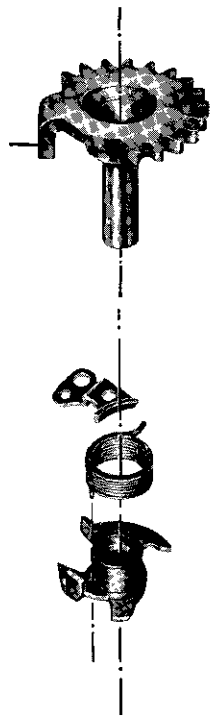
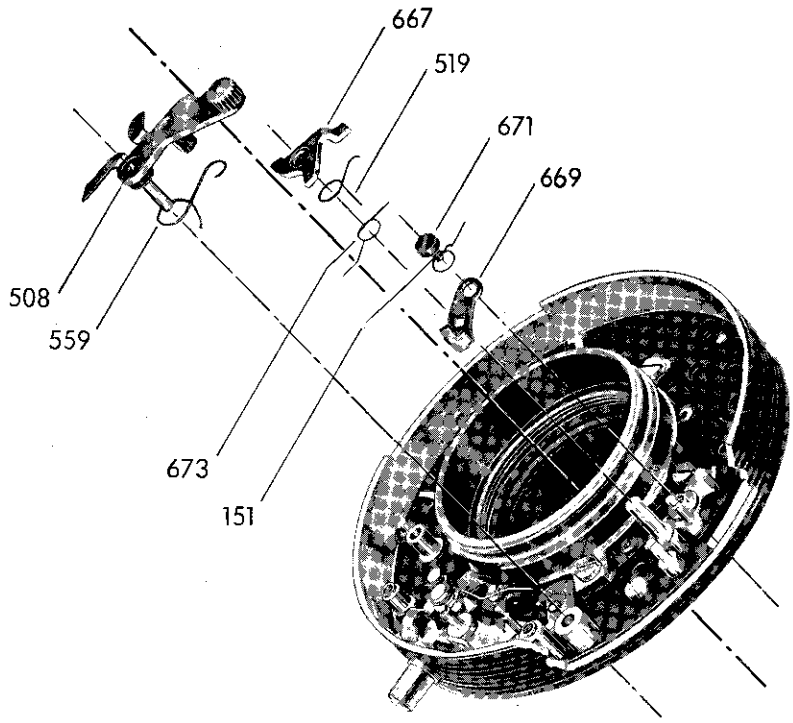
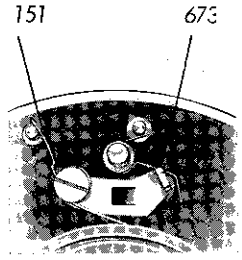
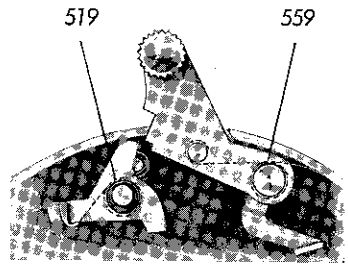


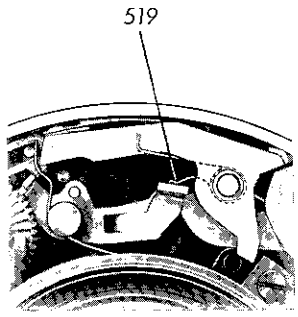
Figure 3-2







1210-000



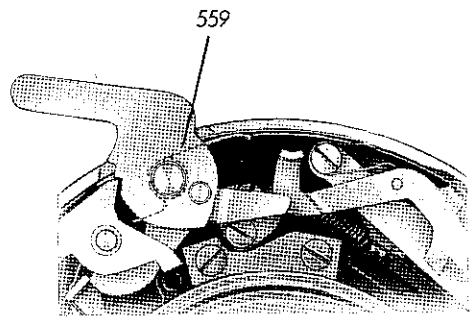
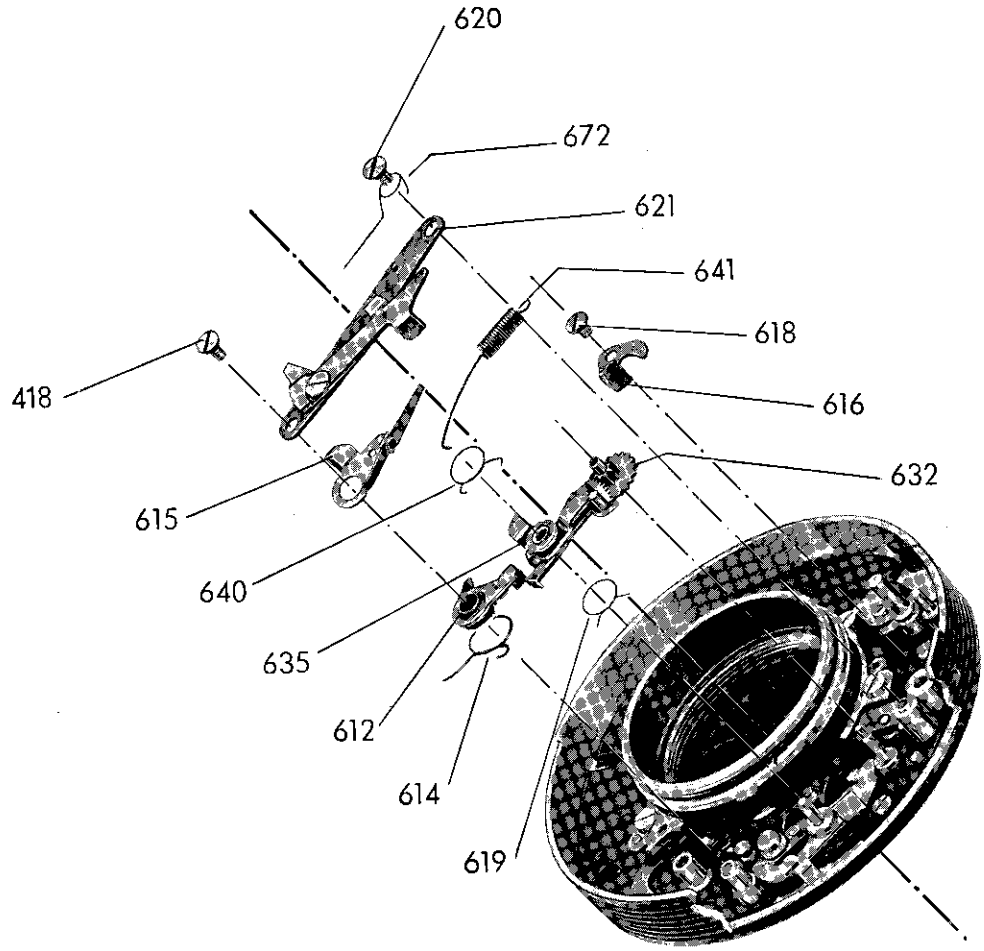


Figure 3-3


620
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621
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418
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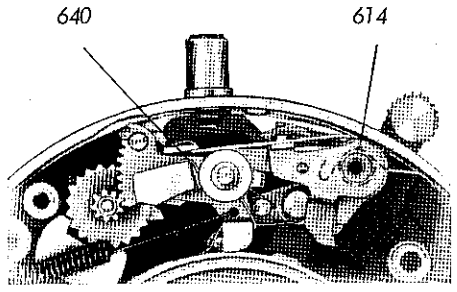
614
619


640
614

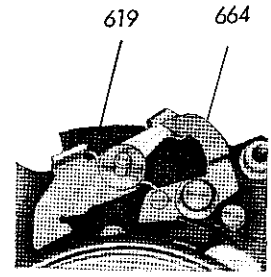
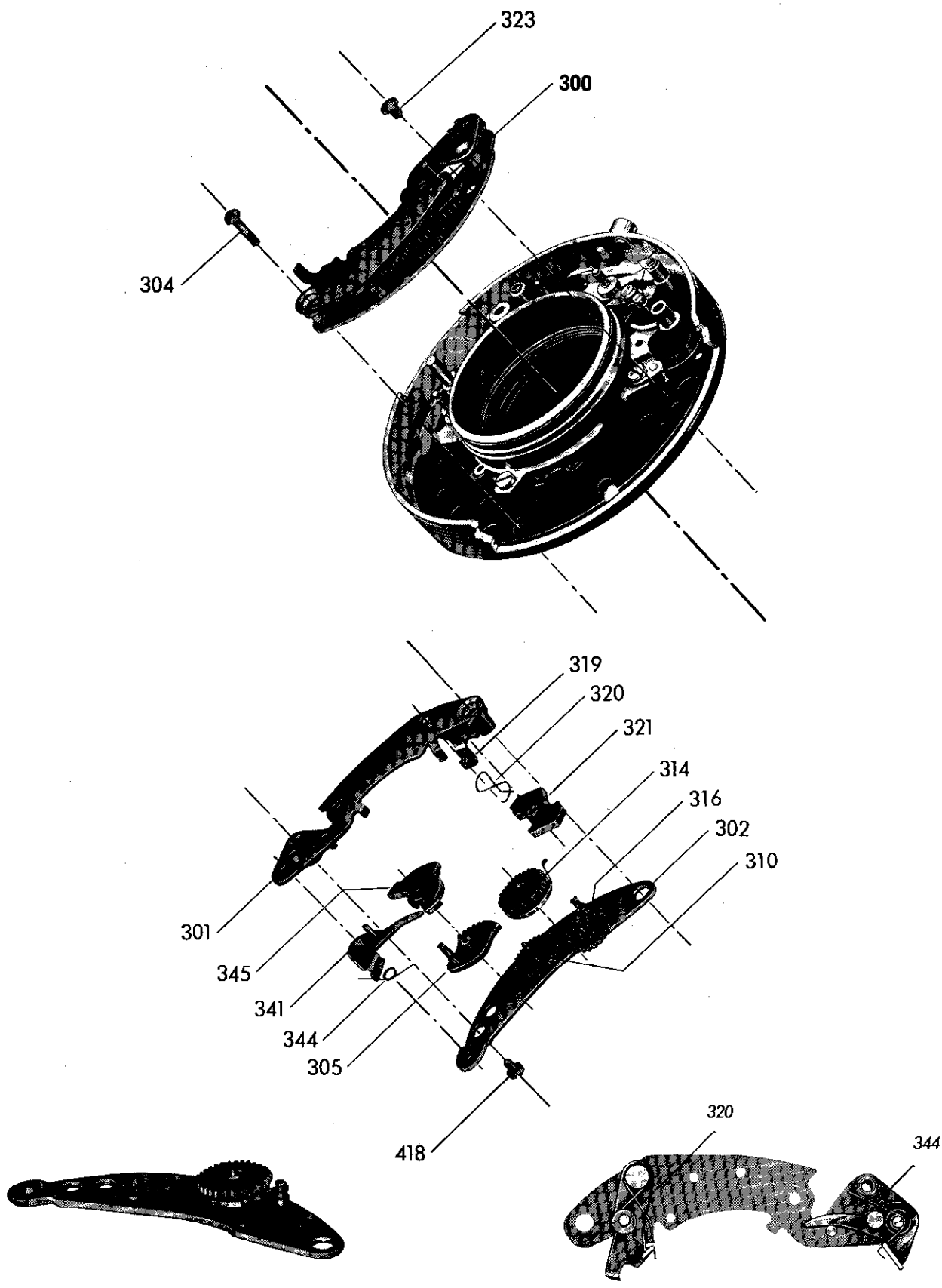

619
664

Figure 3-4


323
300
304
319
320
321
314
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302
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301
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341
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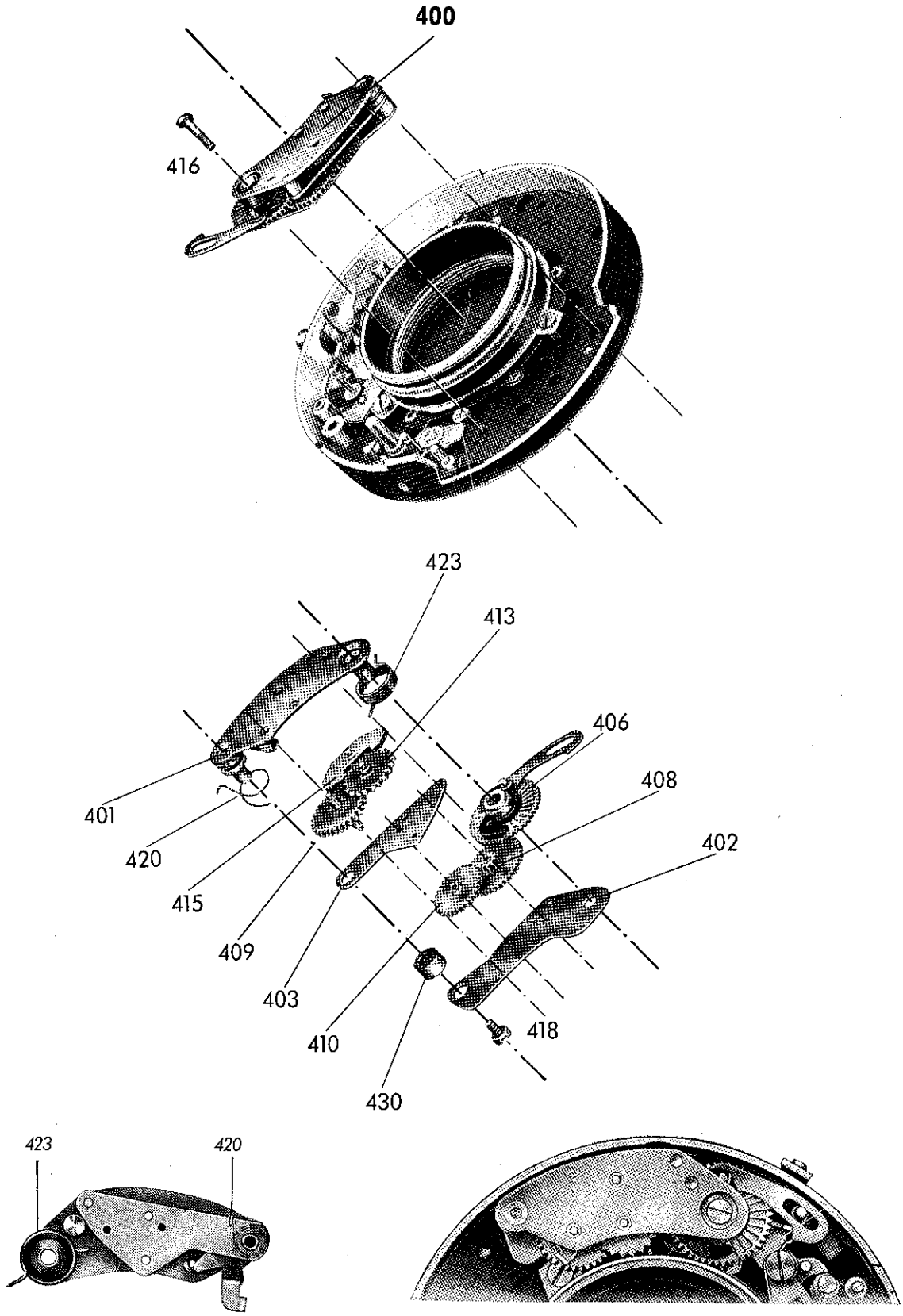
305
418
320
344

Figure 3-5


400
416
423
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406
408
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410
418
430
423
420

Figure 3-6

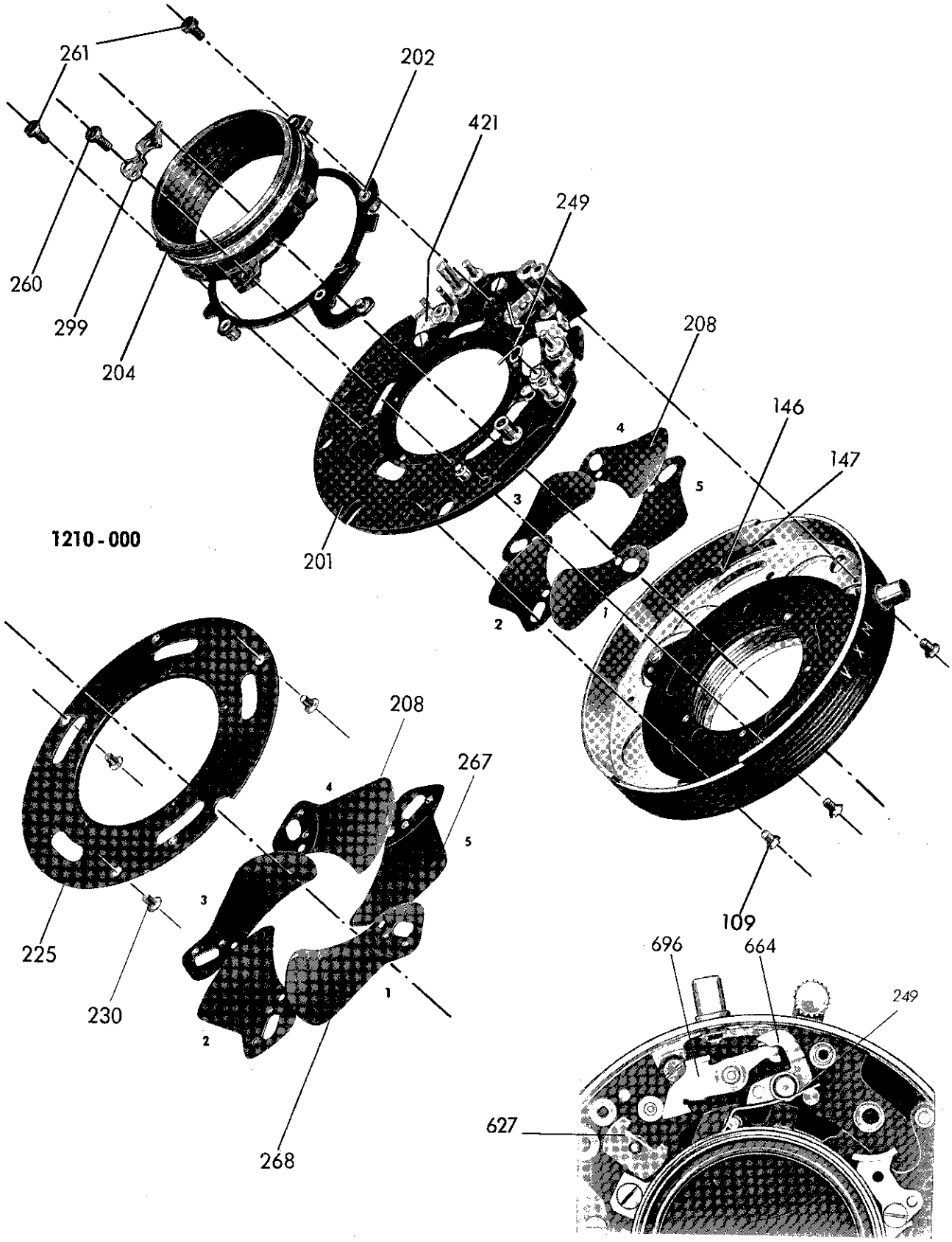

261
202
421
249
260
299
204
208
146
147
1210-000
201
208
267
225
230
268
109
696
664
249
627

Figure 3-7

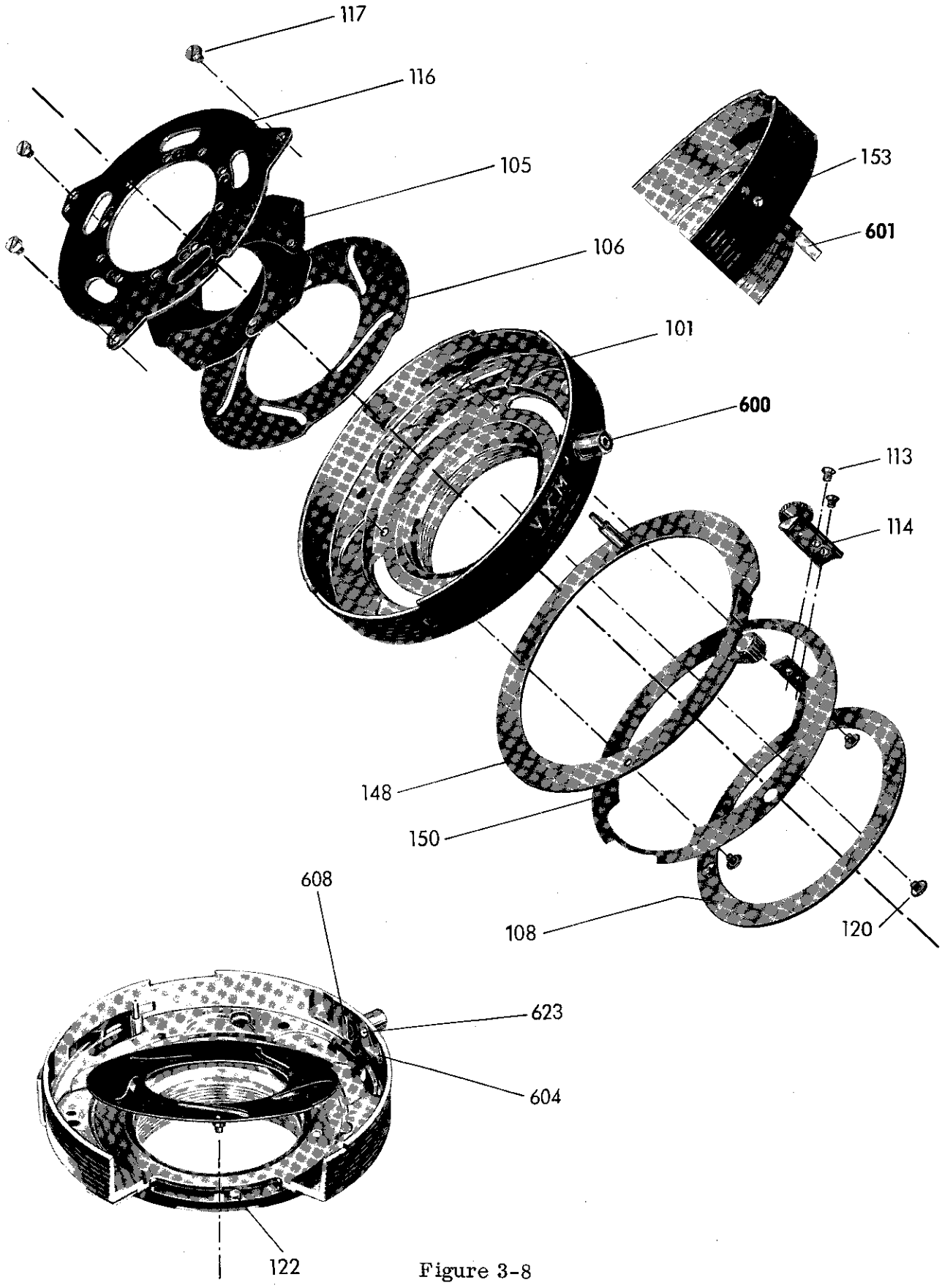

117
116
105
106
153
601
101
600
113
114
148
150
608
623
604
108
120
122

Figure 3-8

SECTION 4 - MAINTENANCE

4-1. GENERAL

This section provides correct procedures for cleaning and lubricating the disassembled components of the Compur shutter. Before reassembly, each component should be thoroughly cleaned, lubricated, and any defective components replaced. A complete replaceable parts list is provided in Section 8. It is recommended that an adequate quantity of replaceable parts be kept on hand for exchange purposes.

4-2. CLEANING THE SHUTTER

Remove parts or assemblies from the shutter for cleaning. Rinse them in clean, grease-free trichloroethylene or perchloroethylene. Do not wash any components in white gasoline or similar cleansing agents.

Do not disassemble the escapement and self-timer mechanisms for cleaning. Since the summer of 1965, they have been coded with a colored dot which indicates that the manufacturer has treated each with a thin film of oil, visible only with a microscope.

When polishing and burnishing certain parts where friction occurs, remember that a certain amount of friction is necessary for the well balanced field of forces.

Before reassembling components in the shutter, be positive they are completely dry and relubricated according to the lubricating instructions.

Never wet-cleanse enameled parts, parts with filled engravings, or the mounted f-scale. Use a soft chamois leather or brush.

4-3. LUBRICATING INSTRUCTIONS

The 1110 Compur shutter requires minimum lubrication both during the assembly process and after repair and its return to circulation. Some components are permanently lubricated and sealed by the manufacturer and should not be disturbed.

The necessary lubricants termed A and C on the Lubrication Schedule on the following pages can be ordered from Honeywell. Only by using lubricants A and C can proper functioning of the shutter be insured.

Lubrication Schedule 1110, Figures 4-1 and 4-2, provide both the points to be serviced and the required lubricant to use. Apply a thin film of the prescribed lubricant to a glass plate, then use a fine brush or foam rubber swab to apply the lubricant at the required points.

After cleansing components, use Lubricant A to service the following parts not listed in the Lubrication Schedule:

1. Base plate 201: All shafts, bearing bushes and other parts riveted in position.

2. Escapement 300 and Self-timer 400: All bearings. The tooth flanks of bright brass gear wheels should also be lubricated slightly; gear wheels and pinions having a grey lustre have been lubricated by a special process during manufacture and don't need subsequent lubrication.

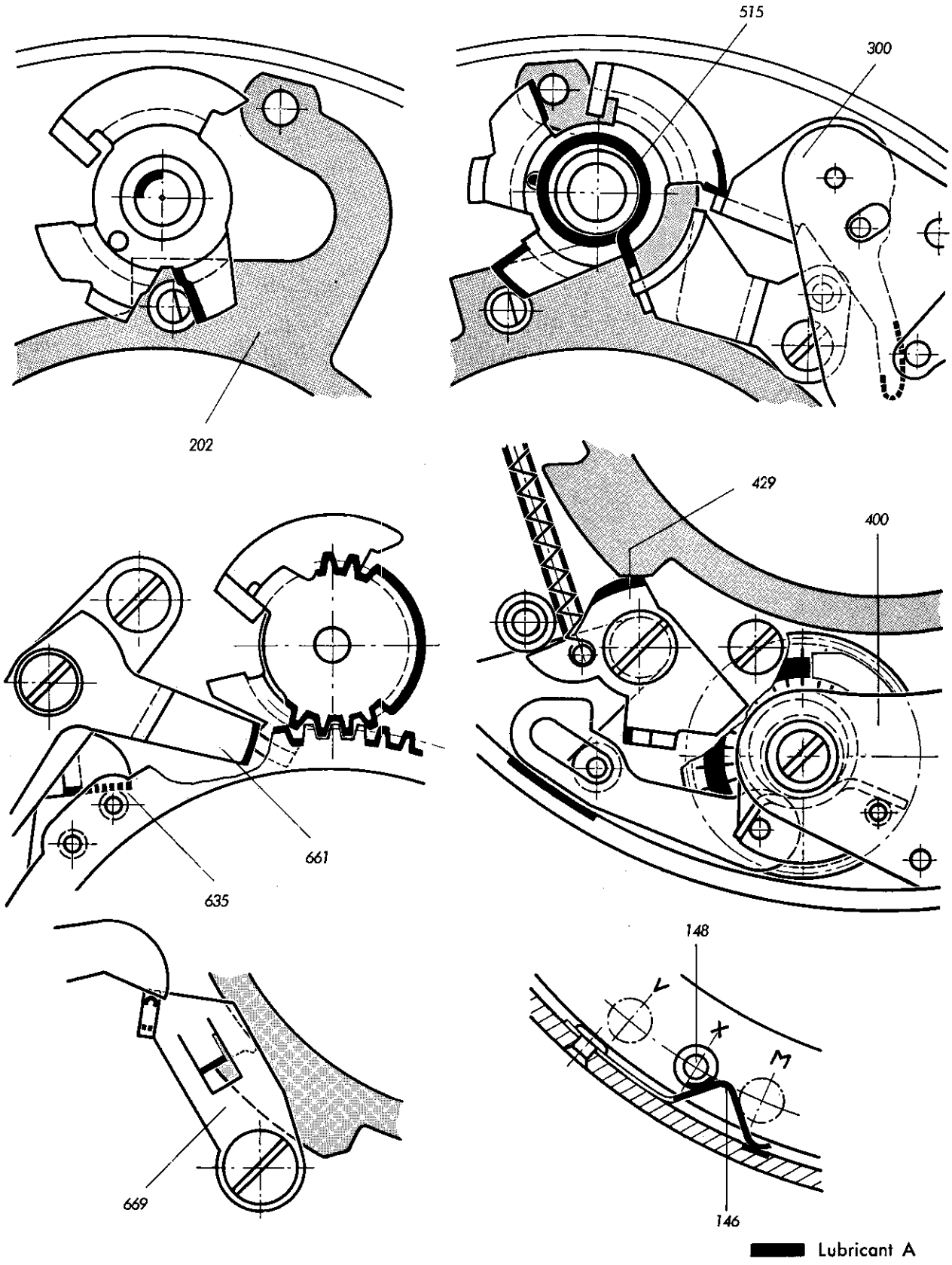


Figure 4-1

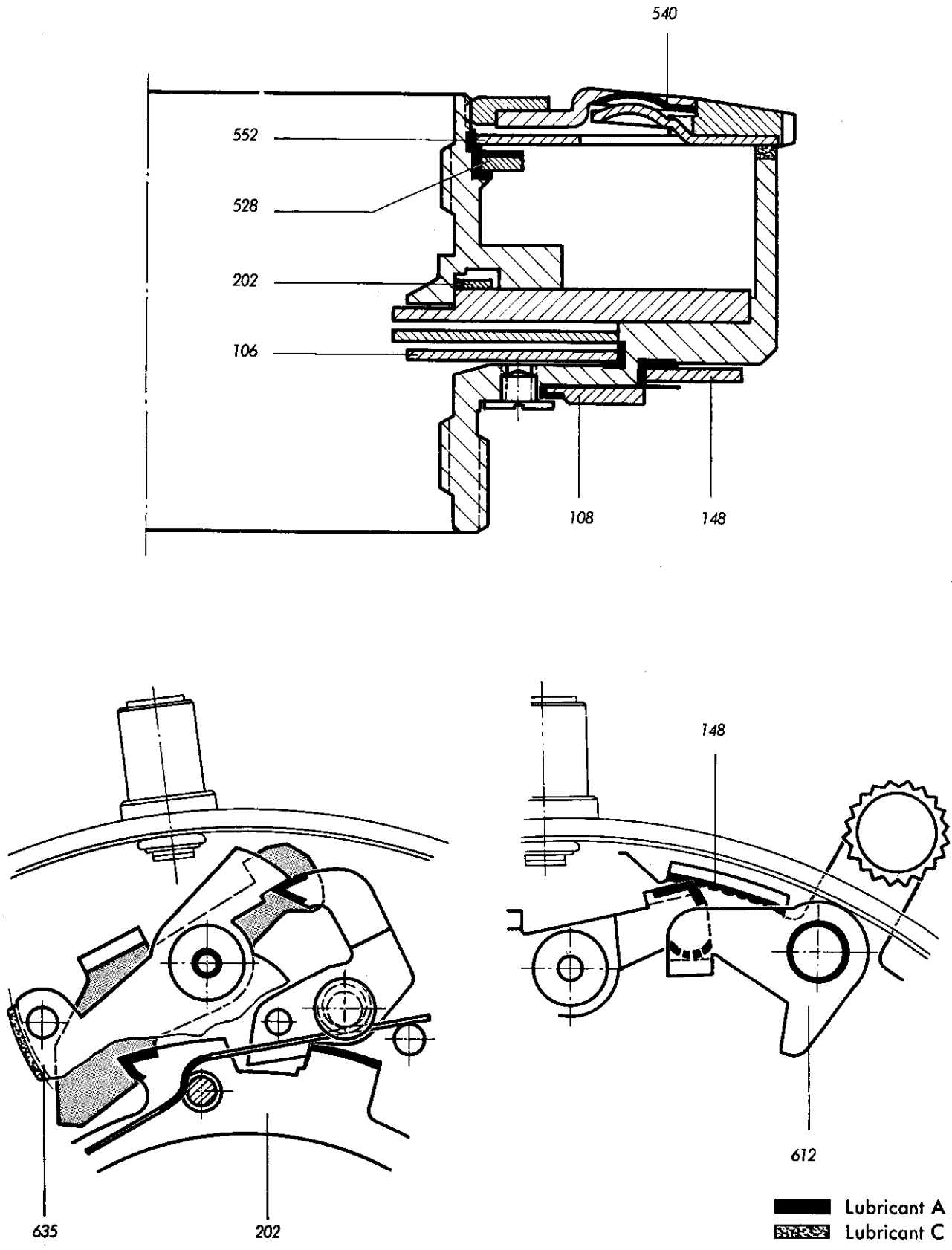

540
552
528
202
106
108
148
148
612
635
202
Lubricant A
Lubricant C

Figure 4-2

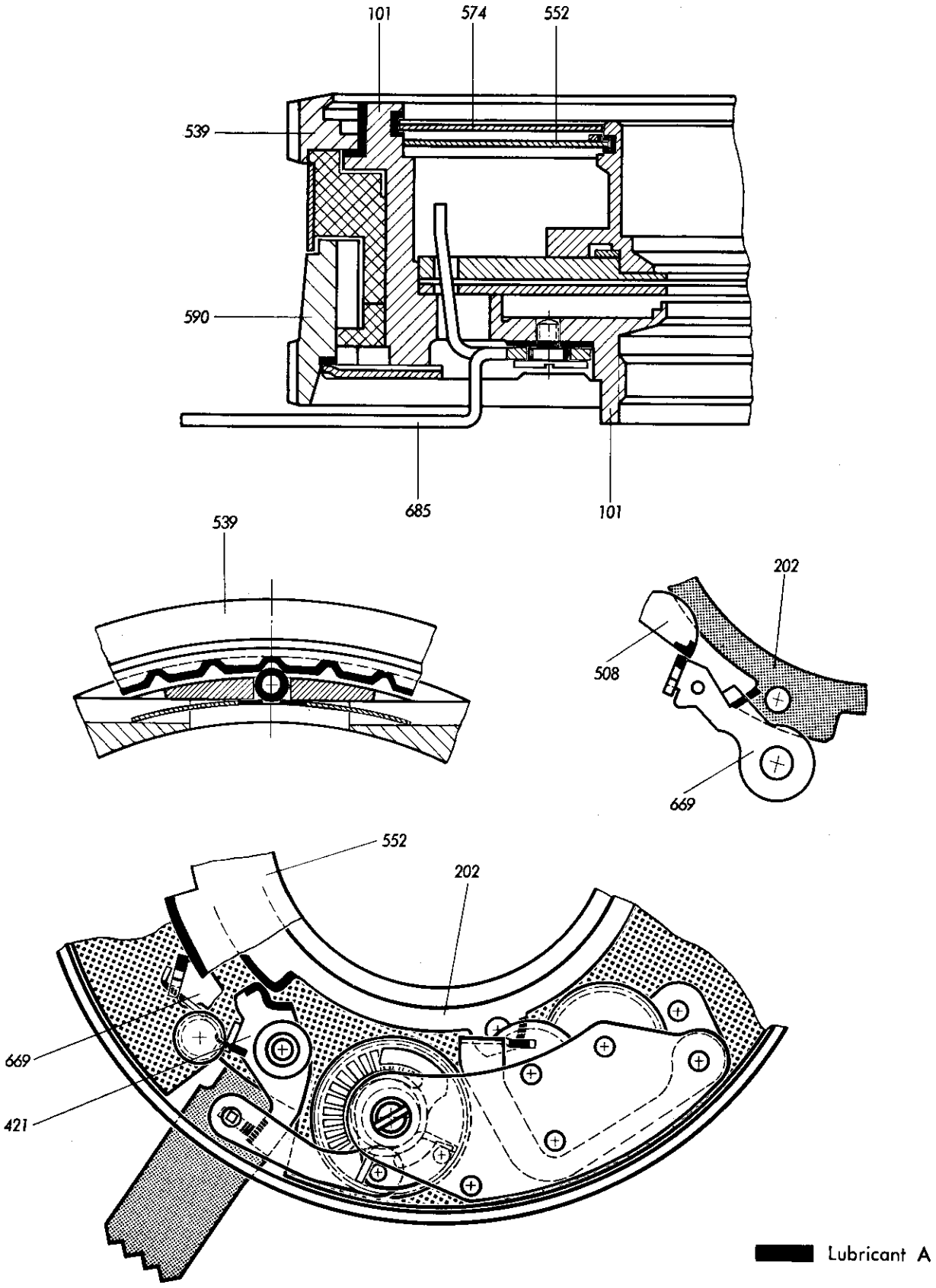

101
574
552
539
590
685
101
539
202
508
669
552
202
669
421
Lubricant A

Figure 4-3

SECTION 5 - ASSEMBLY AND ADJUSTMENT

5-1. GENERAL

This section lists procedures, in the proper numerical order, for assembling the Compur shutter. Before attempting the reassembly process, check each component carefully for thorough cleansing, lubricating, and possible defect. All replaceable component parts are listed in Section 8. Paragraph 5-3 of this section gives detailed instructions for properly adjusting various individual components at the time of reassembly. Refer to Figures 3-1 through 3-8 to identify the components, the component number and proper placement of the components during reassembly.

5-2. ASSEMBLY SEQUENCE

The following paragraphs describe, in numerical order, the proper reassembly sequence for the Compur shutter:

1. Beginning opposite the locator pin, put five diaphragm blades on sector cover 116, and continue counterclockwise. The first diaphragm blade 105 must be lifted over the last diaphragm blade.

2. Align diaphragm blades 105 to the inner diameter of the sector cover 116.

3. Put diaphragm cover 106 on diaphragm blades 105. All five rivets have to engage in guide slots.

   NOTE: Cut-out of diaphragm cover and blade cover have to match.

4. Lubricate slightly the surface of the housing and shoulder for the diaphragm cover, and the lift spring of the setting pin.

5. Housing 101 with positioning hole, and locator pin of sector cover must be mated. Carefully rotate the housing, including assembly jig, approximately 180^{o}. Install sector cover 116 with three screws 117.

6. Check diaphragm 106 by opening and closing the diaphragm.

7. Put base plate 201 on the assembly jig. Lubricate the inner diameter of sector ring 202 lightly with Molycote. Lubricate working edges for M-cam check lever, shutter speed lever 669, and self-timer check lever.

8. Install sector ring 202. Swivel all levers aside and place mounting tube 204 on base place with wide lip in the direction of drive bushing. Place stop 299 on wide lip and fasten with long screw 260. Stop has to touch mounting tube. Fasten and secure remaining two screws 261.

9. Check operation of sector ring.

10. Remove base plate 201 from assembly jig. Bring sector ring 202 into an open position and turn around 180°. Install sectors 208 counter-clockwise starting at drive bushing.

11. Place housing with cutout for setting ring pin in correct position over base place and secure with 3 casing screws 109.

12. Check operation of sector ring 202.

13. Install new sector ring closing spring 249.

NOTE

A new main spring, closing spring, and for the 1210 shutter, a new plastic M-detent lever (made of Delrin) must be installed with each new repair.

14. Check operation of sector ring closing spring 249.

15. Place spring 619 for M-cam check lever with long arm behind lip of M-cam check lever and short arm behind rivet of M-detent lock 664.

16. Check M-cam check lever 696 and M-detent lock 664.

17. Install M-spur gear 632, unlubricated.

18. Install M-detent 635. Lubricate place of function of M-detent lock 664 and hook spring 641 into position.

19. Check operation of M-detent and lock as well as proper release.

20. Place M-contact lever with lip between M-detent lock. Place tension spring behind housing wall and slide on shaft.

21. Install X-contact lever 615. Tension M-detent 635 and install bridge 621.

Note: Upper lever must fall by its own weight.

Screw on shoulder screw in direction of M-spur gear.

22. Install locking lever spring 672. Long arm goes in slot of locking gear, small arm rests against housing wall.

23. Check operation of locking lever 672.

24. Install shutter speed lever 669. Install screw 671 with spring 151. Short arm of spring goes behind self-timer check lever. Large end of spring goes behind shutter speed lever 669.

25. Install self-timer mechanism. Place V-link before V-detent lever 421 and fasten with screw 416.

26. Install escapement 300 and hold by the touch of a finger. Swivel out anchor plate and fasten with two screws 304 and 323.

27. Lubricate drive 514.

28. Install drive 514; turn clockwise to stop. Install drive spring 515. Small end goes in hole of drive, long end goes over stop.

NOTE: Upper spring end must not protrude.

29. Install release 508. Tension spring rests against housing.

30. Lightly lubricate the inner diameter of setting ring 148 and teeth. Place setting ring 148 on housing. Pin lies behind spring of shutter speed lever 669. Place setting ring disc 150 in position. Do NOT lubricate the inner diameter of diaphragm ring 108. Fasten diaphragm ring with three screws 120.

31. Check click stop, setting ring and smooth movement of diaphragm ring.

32. Lubricate inner diameter of cocking ring 528, teeth, and pawl pin. Lubricate the mounting tube 204 position where spring of cocking ring touches. Hook on eyelet of spring and install cocking ring.

33. Lubricate teeth and shaft of cocking pinion 517. Install cocking pinion in gap of first tooth of cocking ring.

34. Install V-release lock 667 and place spring against release pin.

35. Lightly lubricate the inner diameter of slotted cam ring 552 and install without play.

NOTE: V-detent lever must be swiveled aside.

36. Place exposure setting ring 539 in position (affix with slotted cam ring 552). Lightly lubricate with Molycote and plane surface of exposure setting ring for the cover plate 540.

37. Lubricate ratchet-teeth of cover plate 540 with an anti-corrosion lubricant. Place cover plate 540 into position and screw on threaded ring 547. Secure with retaining screw 538.

38. Check that all components are functioning properly.

5-3. ADJUSTMENT OF INDIVIDUAL COMPONENTS

The following describes in detail the procedures for proper adjustment and, in turn, proper functioning of the various components of the shutter.

NOTE

Proper adjustment of the individual components must be made when the parts are reassembled in the correct order.

Do not attempt to adjust any part or group of parts after the shutter has been completely re-assembled.

A. EXPOSURE SETTING RING: Adjust the exposure setting ring for smooth operation by tightening the threaded ring 547 finger tight. After this adjustment is completed, use the retaining screws 538 to lock the threaded ring at the nearest possible point. See Figure 3-1.

B. CAM RING: The cam ring 552 must be a play-free fit on the mounting tube 204. If necessary, take up play by widening the slots in the cam ring. See Figure 302.

C. COCKING PINION, COCKING RING AND DRIVE: The cocking pinion 517, cocking ring 528, and drive 514 determine the length of travel during cocking between the locking of the M-detent and the jumping-back of the blade opening pin in the blade ring 202. See Figure 3-2.

Due to possible differences in the cocking and release locks incorporated in the camera, the length of travel may be adjusted in the following ways:

1. Engagement of M-detent occurring simultaneously with or shortly after the engagement of the opening pin.

2. Engagement of M-detent occurring simultaneously with or at any desired time before the engagement of the opening pin.

3. Engagement of M-detent occurring simultaneously with, or shortly before the engagement of the opening pin.

The required adjustment is indicated in the applicable Spare Parts List by the letter A, B, or C used as a prefix to the Stock Number of the cocking pinion.

If 514, 517, or 528 has to be replaced, the length of travel must be checked and readjusted.

In the case of adjustments A and C, the width of the lug on the cocking pinion should be reduced, parallel to the surface of the drive, at the point indicated by an arrow in Figure 3-2. Where the width of the lug is insufficient, a new cocking pinion should be fitted and adjusted as necessary. Adjustment B requires no additional operations.

Insert the cocking pinion so its first tooth engages in the first tooth gap of the cocking ring.

The three different adjustments just discussed are based on the use of the M-detents and cocking pinions listed in the Spare Parts Lists. In the case of manually cocked shutters, the cocking lock is mounted on the M-detent. Where the closing element is coupled to the film winding mechanism, no cocking lock is used. The M-detent required in each particular case is identified by the number in the Spare Parts List.

D. BRIDGE WITH LOCKING LEVER: With the jumping-back of the opening pin in the blade ring 202, the locking lever should prevent, simultaneously, any return movement of the drive 514. Where parts 514 and/or 621 have to be replaced, this function has to be adjusted by rotating the eccentric locking lever pivot 663. See Figures 3-4 and 5-3 #7.

E. ESCAPEMENT 300: The depth of engagement of the escapement lever is factory adjusted so with the lever plate 319 resting against adjusting lug of plate 301, it amounts to 1/2 to 1/3 of the height of the tooth. See Figure 5-3, #1 and #2.

Push the lever plate toward the periphery of the case to permit insertion of the escapement.

F. SHUTTER SPEED ADJUSTMENT: These adjustments must be performed in the order given:

1. 1-Second (See Figure 5-3, #3). Back off the two securing screws and pivot the escapement about screw 304 on the lever side (toward the mounting tube for increased exposure time, or toward the periphery of the case for shorter exposure time). Firmly tighten the two securing screws upon completion of adjustment.

2. 1/15 Second (See Figure 5-3, #4). With cam ring 552 in position, bend the detent pin as required (toward tubular mount for shorter exposure, and toward the periphery of the case for longer exposure).

3. 1/500 Second (See Figure 5-3, #5). The cam ring should render escapement lever 341 inoperative to such an extent that drive 514 can run down without any obstruction. For this purpose, the pin of the check lever should be bent as required.

After completing these three adjustments, all other shutter speeds will automatically be timed correctly.

The various shutter speeds are subject to the following tolerance limits:

Shutter Speeds	1	2	4	8	15	30	60	125	250	500 (1/s)
Tolerance Limit	± 15%								± 20%	

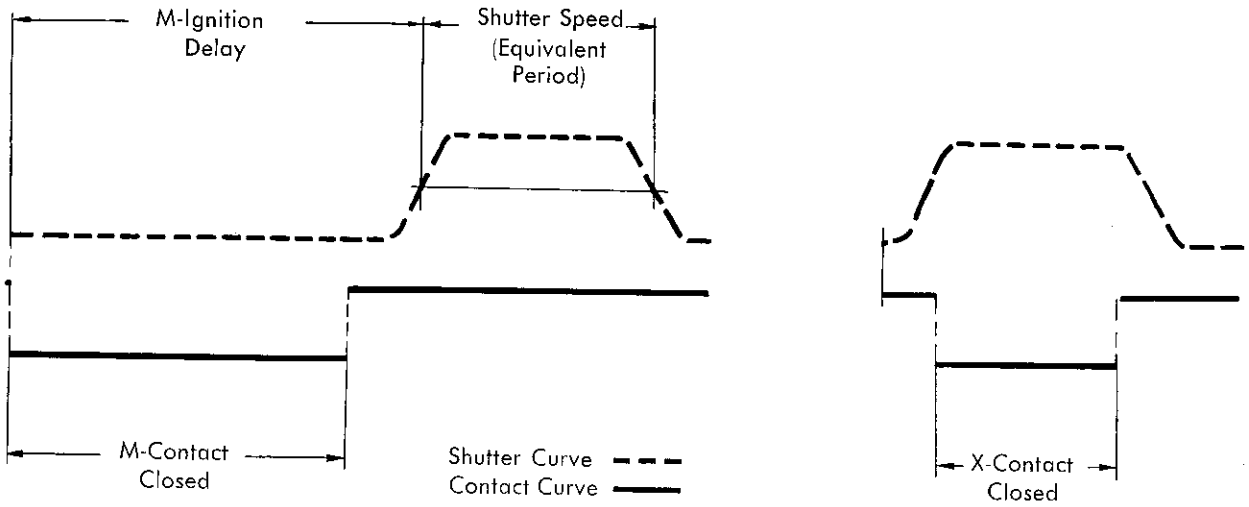


Figure 5-1. Flash Synchronization Diagram

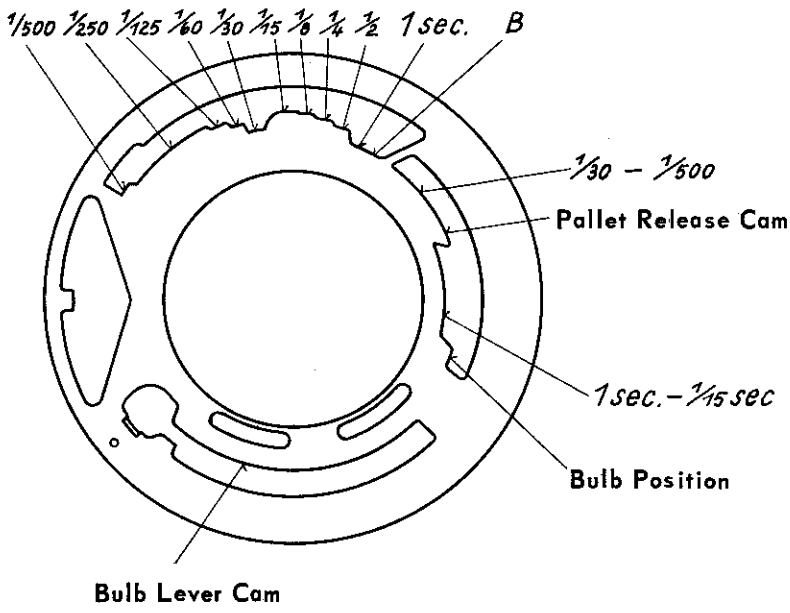


Figure 5-2. Cam Ring

G. SELF-TIMER 400: Insert the mechanism in a half-wound condition and allow mechanism to run down after insertion. The running-down time is 8 to 10 seconds, and need not be adjusted. See Figures 3-6 and 5-3.

Stop 298 for the V-detent lever 421 is in the form of an eccentric, thus permitting the play to be adjusted between the V-detent lever and blade ring 202 (Figure 5-3, #6). The play should be such that, with the self-timer out of operation, the blade ring can run down freely; the self-timer, when used, will run for no more than one second after the shutter is released.

H. STOP: Stop 299 should be pressed against the tubular mount 204 while being fitted. See Figure 3-7.

I. BLADES: Blades 208 and their bearings must be completely free of grease. The sequence in which the parts are to be fitted is shown in Figure 3-7, beginning with the bearing sleeve of the drive 514 (Figure 3-2). In size 0 shutters (1210-000), the points of the first blade 268 and the last blade 267 are bent slightly upwards to improve their sliding action. "Lastina" varnish 22773, black, should be applied to fastening screws 230 of the blade mounting plate to lock the screws in position.

J. M-CAM CHECK LEVER, M-ANCHOR PLATE, M-DETENT LOCK, AND V-DETENT LEVER: M-cam check lever 696, M-anchor plate 627, M-detent lock 664 and V-detent lever 421 are riveted in position on base plate 201. When replacing any of these parts the respective rivet(s) must be removed by drilling. Exercise extreme care when riveting to prevent the base plate from being distorted. See Figure 3-7.

A new main spring, closing spring, and for the 1210 shutter, a new plastic M-detent lever (Delrin) must be installed. To minimize adjustments and guarantee correct functioning after a shutter repair, use extreme care when removing or re-installing the springs.

K. DIAPHRAGM SEGMENTS: Keep diaphragm segments 105 and their bearings completely free of grease. See Figure 3-8.

L. SYNCHRONIZATION: (See Figures 3-4 and 5-3)

The minimum contact gap with the shutter cocked should be 0.5 mm (0.020"). In the case of Synchro-Compur, measure the contact gap in the M position. See Figure 5-3, #7.

Minimum contact pressure in X positions: 60 gms (2.1 ozs) (#8).

X-contact closes as soon as the blade points lie between a circle 15.5 mm (0.610") diameter (size 00) or 22.0 mm (0.778") diameter (size 0) on the one hand and the full diameter of the shutter aperature.

Compensate for deviations from the above values by bending contact spring 615, fixed to the X-contact lever, as required.

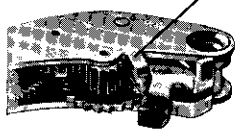
The M ignition advance period, as measured between the closing of the contact and the point at which the shutter aperature is one-half open, should be 16-1/2 milliseconds ± 10%.

To adjust the M ignition delay, back off screw 618 and rotate eccentric 298 as required (#7). This changes the tension of detent spring 641.

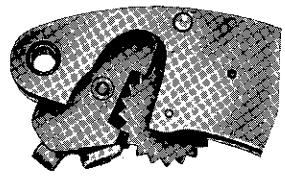
The delay will be shortened by an increase in spring tension and lengthened by a reduction in spring tension. Be sure to firmly retighten screw 618.

The pressure of the M-contact, which is determined by the shutter design, should be at least 10 gms (0.35 oz).

#1



#2



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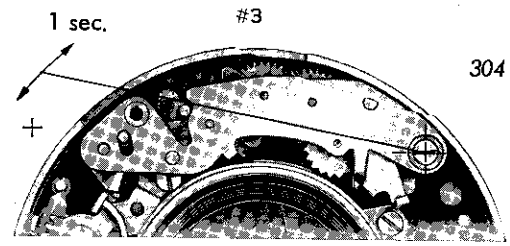
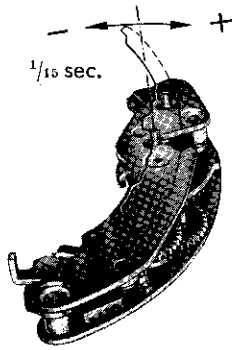
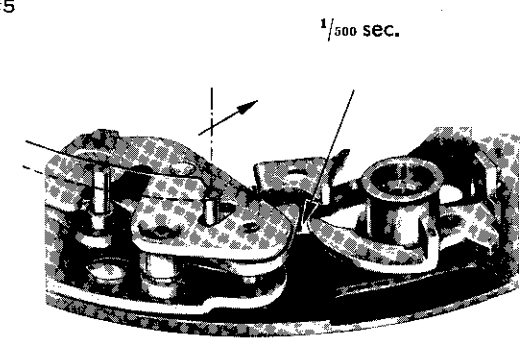


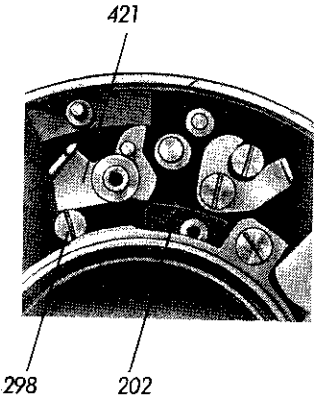
#4



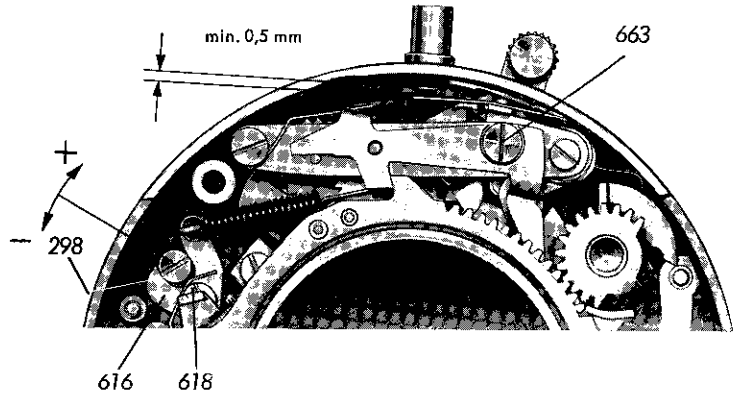
#5



#6

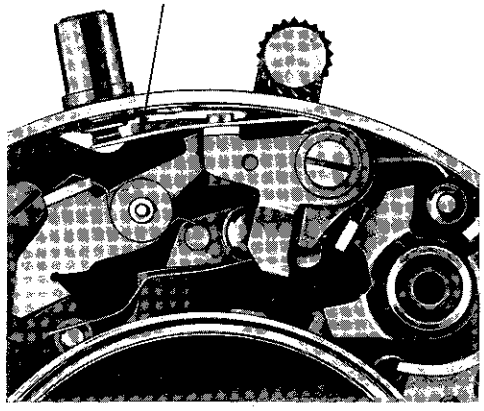


#7



#8 X-CONTACT

P = min. 60 gr.



#9 M-CONTACT

P = min. 10 gr.

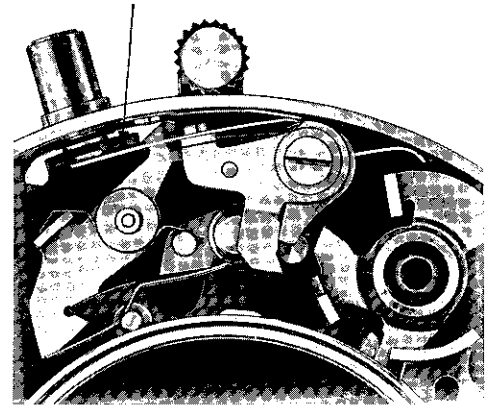


Figure 5-3

SECTION 6 - SPECIAL INSTRUCTIONS FOR STANDARD 1110-010

6-1. GENERAL

The procedures for disassembling, maintenance, adjustment and reassembly of the Standard 1110-010 shutter are the same as for the 1110-000. Refer to Sections 3 and 5 for this detailed information. For descriptions on cleaning and lubricating the 1110-010, refer to information contained in Section 4, including Figures 4-1 and 4-2. A complete list of replacement components is provided in the Spare Parts List under Section 8.

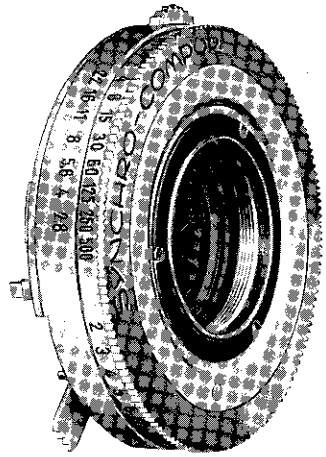


Figure 6-1. Standard 1110-010 Shutter

6-2. ASSEMBLY AND ADJUSTMENTS

The following information is provided to aid the technician in reassembling and making proper adjustments of the special components of the 1110-010 shutter:

A. DIAPHRAGM SETTING RING AND DIAPHRAGM RING: The relative position of diaphragm setting ring 590 and diaphragm ring 108 is determined by a groove cooperating with a lug. See Figure 6-2.

B. EXPOSURE CONTROL RING, SHUTTER SPEED COUPLING RING AND CAM RING: The relative position of exposure control ring 529, shutter

speed coupling ring 163 and cam ring 552 is determined by grooves cooperating with lugs. See Figure 6-2.

NOTE

All other adjustments are the same as those listed under paragraph 5-3 of Section 5 in this manual.

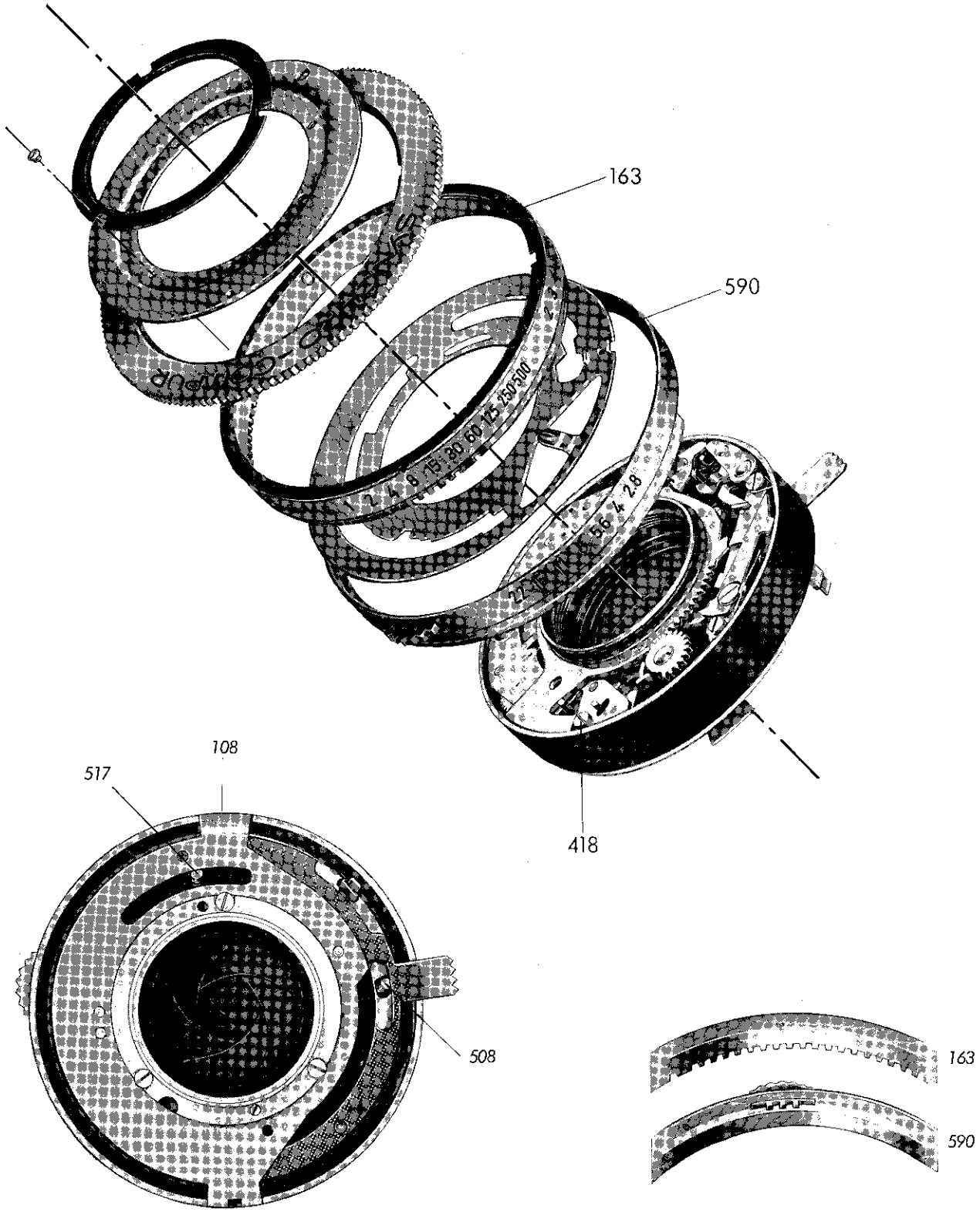


Figure 6-2

SECTION 7 - SPECIAL INSTRUCTIONS FOR STANDARD 1110-019

7-1. GENERAL

The proper procedures for disassembling, maintenance, adjustment and reassembly of the Standard 1110-019 shutter with light-value follow-up system are identical to those for the 1110-000 and 1110-010 shutters. Technicians should refer to Sections 3 and 5 of this manual for this detailed information. Descriptions of cleaning and lubricating methods for the 1110-019 may be found in Section 4. A complete list of replacement components for the 1110-019 is provided in the Spare Parts List under Section 8.

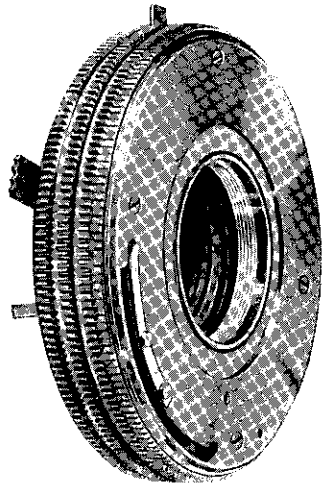


Figure 7-1. Standard 1110-019 Shutter

7-2. ASSEMBLY AND ADJUSTMENTS

The following information is provided for making reassembly and proper adjustments of components of the 1110-019 shutter. Adjustments needed for any component not listed in the paragraphs below may be found in the 1110-000 adjustment and assembly parts of Section 5.

A. COCKING PINION, COCKING RING AND DRIVE: Procedures for these adjustments are the same as for the 1110-000, point C, adjustment 2.

B. EXPOSURE CONTROL RING: Smooth action and proper functioning of stops are insured by the design of exposure control ring 539. After replacing the cover plate, it may be necessary to adjust the ball stop spring so that, with smooth travel of the exposure control ring, slotted cam ring 522 (shown in Figure 7-2) engages efficiently.

C. COVER PLATE, EXPOSURE CONTROL RING AND FLANGED INTERMEDIATE RING: When replacing cover plate 540, exposure control ring 539 and flanged intermediate ring 815, the vertical play of the exposure control ring must be checked. It should be between 0.03 mm and 0.08 mm. If there is too little play, the Planar guide surface for the exposure control ring on the cover plate must be machined down. If there is too much play, the cover plate also must be replaced and, if necessary, the above adjustment performed. See Figure 7-2.

D. ASSEMBLY OF THE LIGHT-VALUE MECHANISM: (See Figure 7-2)

1. Repair from the front end of the shutter. (Cover plate 540 and exposure control ring 539 are removed, but not retaining plate 174).

   Diaphragm setting ring 590 with diaphragm ring 108 and flanged intermediate ring 815 are turned in a counter-clockwise direction to the stop (i.e., largest aperture). Exposure control ring 539 with slotted cam ring 552, fastened by groove and lug, are placed at setting "B"; the flanged intermediate ring must not be shifted from its position during this operation.

   Cover plate 540, with ball stop inserted (heavily greased with lubricant A), is then mounted and firmly fastened with screws 004.

2. When effecting repair from the rear of the shutter, retaining plate 174, diaphragm setting ring 590, and flanged intermediate ring 815 are removed, but not the cover plate.

   Exposure control ring 539, with slotted cam ring 552, is inserted at setting "B".

   Flanged intermediate ring 815 is mounted so that one edge of

the recess is aligned with one edge of the housing groove, as in Figure 7-2, lower illustration, arrows.

When positioning setting ring 148, insure that the shutter speed lever spring 673 contacts the setting ring pin on the correct side.

Set the diaphragm to the smallest aperture with diaphragm ring 108 (up against stop) and mount the diaphragm setting ring. Fastened by groove and lug, retaining plate 174 should be screwed on with the MX locking lever swung out.

Check: At settings "B" and "500", it should be possible to set both the largest and the smallest aperture.

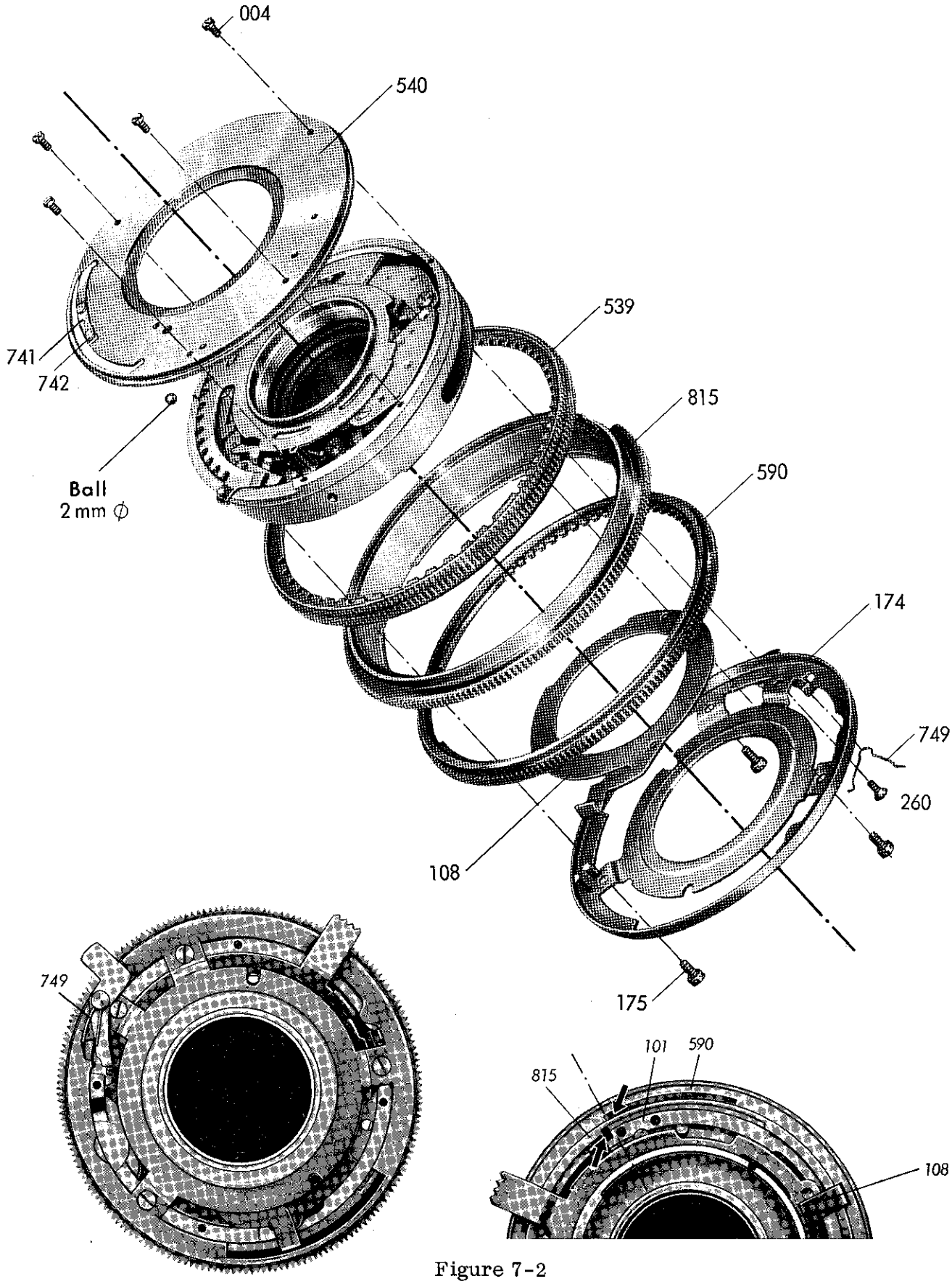

004
540
539
741
742
815
Ball
2 mm ϕ
590
174
749
260
108
175
749
101
590
815
108

Figure 7-2

SECTION 8 - SPARE PARTS LIST

8-1. GENERAL

This section contains the Camera/Lens/Shutter Table, Spare Parts List for Cocking Ring 1110-000, 1210-000 and Spare Parts List for special shutters.

8-2. ORDERING INFORMATION

Because of the variety of Shutter designs, use only the part designations found in the Spare Parts Lists and, in particular, the complete fourteen-digit stock numbers. This is the only way to exclude errors and insure rapid fulfilment of your orders.

To find a spare part number, you should know the camera manufacturer, camera model and lens data. Consult the Camera/Lens/Shutter Table which is arranged in the alphabetical order of camera manufacturers. In the first three columns of this table you will find camera model, lens data and the applicable special shutter number (CS-number).

The Spare Parts List is subdivided into lists for standard shutters and special shutters. The Spare Parts Lists for standard shutters are arranged according to standard type numbers; those for special shutters and in the alphabetical order of the camera maker's name.

In the "Type" column of the Spare Parts Lists for special shutters is the special shutter number. The special parts, i.e., those parts only installed in that particular special shutter, are listed in the heading "Description". All other parts covered by the Spare Parts Lists for the standard types (CN-number), referred to at the end of each Spare Parts List.

If you are unable to trace the designation and number of a spare part accurately in the Spare Parts Lists, refer to the illustration plates listed in the Camera/Lens/Shutter Table. The illustrated parts are marked with a three-digit number. This number applies to the standard part shown in the illustration and to any possible special part which serves the same function. Once you have found the three-digit number in the illustration, trace this number first in the "Illustration" column of the Special Spare Parts List. If this number cannot be found there, the part is a standard part and must be looked up in the Spare Parts List for standard shutters, referred to at the end of each Spare Parts List for special shutters.

The numbered items of the Supplement explain special points which should be considered when placing orders or making repairs. Reference to the various items will be found in the "Supplement" column of the Spare Parts List in the form of encircled numbers or symbols (see below).

8-3. SYMBOLS IN SPARE PARTS LIST

The following symbols appear in the first column of the Spare Parts List and indicate a change in the regular ordering procedure:

- • This part may differ from the standard version. Look up stock number in Special Shutter Spare Parts List.
- × This part will not be supplied.
- △ This part must be ordered from the camera maker.
- ○ This part must be ordered from the lens maker.
- ⑨ See Item 9 of Supplement to Compur manual.

A, B or C indicates the cocking pinion adjustment (see paragraph 5-3, C of this manual).

8-4. REPAIR INSTRUCTIONS AND LUBRICATION SCHEDULES

The table also contains, under the headings "Repair Instruction" and "Lubrication Schedule", indications of the applicable instructions for repair and maintenance and lubrication of the shutter. Pay special attention to these points to insure thorough and proper maintenance.

Camera/Lens/Shutter Table					
Camera	Lens	Special Shutter	Illustration Figure	Rep. Instr. Page	Lubrication Schedule Figure
Rolleiflex	Tessar 3.5/75	CS 1110-226	3-1 thru 8 6-2	5-4/5-8 6-1	4-1 & 2
Rolleiflex 6x6	Xenar 3.5/75 Tessar 3.5/75 Planar 3.5/75	CS 1110-230	3-1 thru 8	5-4/5-8	4-1 & 2
Rolleicord V	Xenar 3.5/75	CS 1110-231	3-1 thru 8	5-4/5-8	4-1 & 2
Rolleiflex 4x4	Xenar 3.5/60	CS 1110-235	6-2 3-1 thru 8	6-1 5-4/5-8	4-1 & 2
Rolleiflex 6x6	Xenotar 3.5/75	CS 1110-236	3-1 thru 8	5-4/5-8	4-1 & 2
Rolleiflex 3.5 F	Xenotar 3.5/75	CS 1110-238	3-1 thru 8	7-1/7-3 5-4/5-8	4-1 & 2 4-1 & 2
Rolleiflex 3.5 F	Planar 3.5/75	CS 1110-239	3-1 thru 8	7-1/7-3 5-4/5-8	4-1 & 2
Rolleiflex T	Xenotar 3.5/75	CS 1110-240	6-2 3-1 thru 8	5-4/5-8	4-1 & 2
Tele-Rolleiflex	Sonnar 4.0/135	CS 1210-275	3-1 thru 8	5-4/5-8	4-1 & 2
Weitwinkel-Rolleiflex	Distagon 4.0/55	CS 1210-275	3-1 thru 8	5-4/5-8	4-1 & 2
Rolleiflex 2.8 F	Xenotar/ Planar 2.8/80	CS 1210-276	3-1 thru 8	5-4/5-8	4-1 & 2

Table 8-1

SPARE PARTS LIST							
Stock No.		Description	Qty.	Illustration		Type
				Figure	No.	
× ●	1110 10 000 101 84	Casing	1	3-8	101	
●	1104 30 000 102 81	Screw-on fitting	1	-	-	
①	1110 10 000 105 84	Diaphragm segment	5	3-8	105	
① ●	1110 10 000 106 85	Diaphragm cover	1	3-8	106	
●	1110 50 000 108 83	Diaphragm ring	1	3-8	108	
●	1110 30 000 109 82	Casing screw	3	3-7	109	
●	1110 30 000 113 81	F-stop indicator screw	2	3-8	113	
●	1110 30 000 114 85	F-stop indicator	1	3-8	114	
●	1104 30 000 115 82	Shutter mounting screw	1	-	-	
①	1110 10 000 116 81	Sector cover	1	3-8	116	
●	1110 30 000 117 81	Sector cover screw	3	3-8	117	
①	1110 30 000 120 83	Diaphragm ring guide screw	3	3-8	120	
	1110 40 000 146 81	MX click stop spring	1	3-7	146	
	1110 40 000 147 83	Rivet f. MX click stop spring	1	3-7	147	
●	1110 10 000 148 81	Setting ring	1	3-8	148	
●	1110 30 000 150 82	Setting ring disc	1	3-8	150	
⑩	1110 30 000 151 83	Setting ring spring	1	3-3	151	
× ●	1110 10 000 201 84	Base plate	1	3-7	201	
	1110 10 000 202 85	Sector ring	1	3-7	202	
× ●	1110 30 000 204 83	Mounting tube	1	3-7	204	
④	1110 30 000 208 81	Sector	5	3-7	208	
	1110 30 000 249 84	Sector ring closing spring	1	3-7	249	
	1110 30 000 260 81	Screw for stop	1	3-7	260	
	1110 30 000 261 81	Screw for mounting tube	2	3-7	261	
	1110 30 000 299 84	Stop	1	3-7	299	
	1110 10 000 300 81	Escapement	1	3-5	300	
	1110 30 000 304 81	Escapement screw, long	1	3-5	304	
	1110 40 000 320 83	Anchor plate spring	1	3-5	320	
	1110 30 000 323 81	Escapement screw, short	1	3-5	323	
	1110 30 000 344 81	Check lever spring	1	3-5	344	
	1110 10 000 400 81	Selftimer mechanism	1	3-6	400	
	1110 30 000 416 81	Selftimer mechanism screw	1	3-6	416	
	1110 30 000 418 81	Clamp screw	1	3-4	418	
	1110 30 000 420 82	V-lock spring	1	3-4	420	
⑧	1110 20 000 421 81	V-detent lever	1	3-4	421	
	1110 30 000 423 81	Selftimer mechanism spring	1	3-6	423	
●	1110 10 000 508 82	Release	1	3-3	508	
	1110 10 000 514 82	Drive	1	3-2	514	
	1110 30 000 515 83	Drive spring	1	3-2	515	
A	1110 10 000 517 82	Cocking pinion	1	3-2	517	
	1110 30 000 519 82	Release lock spring	1	3-2	519	
③ ⑲	1110 40 000 521 81	Cocking ring spring	1	3-2	521	
●	1110 10 000 528 82	Cocking ring	1	3-2	528	

Table 8-2

Table 8-2 Cont. SPARE PARTS LIST

		Stock No.	Description	Qty.	Illustration		Type
					Figure	No.	
		1110 30 000 538 82	Retaining screw	1	3-1	538	
	•	1110 30 000 539 83	Exposure setting ring	1	3-1	539	
	•	1110 30 000 540 81	Cover plate	1	3-1	540	
	•	1110 30 000 547 82	Threaded ring	1	3-1	547	
	•	1110 30 000 552 83	Slotted cam ring	1	3-1	552	
		1110 40 000 559 84	Release spring	1	3-3	559	
	•	1110 20 000 600 83	Contact nipple	1	3-8	600	
	•	1110 40 000 604 84	Grounding element	1	3-8	604	
		1110 40 000 608 83	Contact stop	1	3-8	608	
		1110 10 000 612 82	M-contact lever	1	3-4	612	
		1110 30 000 614 84	M-contact lever spring	1	3-4	614	
		1110 10 000 615 81	X-contact lever	1	3-4	615	
		1110 30 000 616 82	M-adjusting element	1	3-4	616	
		1110 30 000 618 82	M-adjusting element screw	1	3-4	618	
		1110 30 000 619 81	M-detent lever spring	1	3-4	619	
		1110 30 000 620 81	Bridge screw	1	3-4	620	
		1110 10 000 621 84	Bridge	1	3-4	621	
		1110 40 000 623 82	Rivet for grounding element	1	3-8	623	
⑧		1110 40 000 627 81	M-anchor plate	1	3-7	627	
		1110 10 000 632 81	M-spur gear	1	3-4	632	
	•	1110 50 000 635 82	M-detent	1	3-4	635	
		1110 40 000 640 81	Cocking lock spring	1	3-4	640	
		1110 30 000 641 83	M-detent spring	1	3-4	641	
⑥		1110 20 000 664 81	M-detent lock	1	3-7	664	
		1110 10 000 667 82	Release lock	1	3-3	667	
		1110 30 000 669 86	Shutter speed lever	1	3-3	669	
	•	1110 30 000 671 81	Shutter speed lever screw	1	3-3	671	
		1110 30 000 672 83	Locking lever spring	1	3-4	672	
⑩	•	1110 30 000 673 82	Shutter speed lever spring	1	3-3	673	
⑨		1110 40 000 696 85	M-cam check lever	1	3-7	696	

	Stock No.	Description	Qty.	Illustration		Type
		SPARE PARTS LIST Cocking Ring			1210-000	
				Figure	No.	
× ●	1210 10 000 101 80	Casing	1	3-8	101	
●	1210 30 000 102 80	Screw-on fitting	1	-	-	
	1210 10 000 105 86	Diaphragm segment	5	3-8	105	
	1210 10 000 106 85	Diaphragm cover	1	3-8	106	
●	1210 50 000 108 82	Diaphragm ring	1	3-8	108	
	1210 30 000 109 80	Casing screw	5	3-7	109	
	1210 30 000 113 80	F-stop indicator screw	2	3-8	113	
●	1210 30 000 114 81	F-stop indicator	1	3-8	114	
●	1204 30 000 115 82	Shutter mounting screw	1	-	-	
	1210 10 000 116 82	Blade cover	1	3-8	116	
	1210 30 000 117 80	Blade cover screw	4	3-8	117	
	1110 30 000 120 83	Diaphragm ring guide screw	3	3-8	120	
	1110 40 000 146 81	MX click stop spring	1	3-8	146	
●	1210 10 000 148 82	Setting ring	1	3-8	148	
	1210 30 000 151 80	Setting ring spring	1	3-3	151	
㊼ × ●	1210 10 000 201 83	Base plate	1	3-7	201	
	1210 10 000 202 82	Blade ring	1	3-7	202	
㊼ × ●	1210 30 000 204 83	Mounting tube	1	3-7	204	
④	1210 10 000 208 82	Blade	3	3-7	208	
	1210 10 000 225 80	Blade plate	1	3-7	225	
	1210 30 000 230 81	Blade plate screw	3	3-7	230	
	1210 30 000 249 82	Blade ring closing spring	1	3-7	249	
⑬	1110 30 000 260 81	Screw for stop	1	3-7	260	
	1210 30 000 261 81	Screw for mounting tube	4	3-7	261	
④	1210 10 000 267 80	Blade, lower	1	3-7	267	
④	1210 10 000 268 80	Blade, upper	1	3-7	268	
	1210 30 000 299 83	Stop	1	3-7	299	
	1210 10 000 300 81	Escapement	1	3-5	300	
	1110 30 000 304 81	Escapement screw, long	1	3-5	304	
	1110 40 000 320 83	Anchor plate spring	1	3-5	320	
	1110 30 000 323 81	Escapement screw, short	1	3-5	323	
	1110 30 000 344 81	Check lever spring	1	3-5	344	
	1110 10 000 400 81	Selftimer mechanism	1	3-6	400	
	1110 30 000 416 81	Selftimer mechanism screw	1	3-6	416	
	1110 30 000 418 81	Clamp screw	1	3-4	418	
	1110 30 000 420 82	V-lock spring	1	3-6	420	
⑧	1210 20 000 421 80	V-detent lever	1	3-7	421	
	1110 30 000 423 81	Selftimer mechanism spring	1	3-6	423	
●	1210 10 000 508 82	Release	1	3-3	508	

Table 8-3

Table 8-3 Cont. SPARE PARTS LIST
Cocking ring

	Stock No.	Description	Qty.	Illustration		Type
				Figure	No.	
× ⑤⑦	1210 10 000 514 81	Drive	1	3-2	514	
	1210 30 000 515 81	Drive spring	1	3-2	515	
A	1210 10 000 517 80	Cocking pinion	1	3-2	517	
	1210 30 000 519 82	Release lock spring	1	3-2	519	
③ ⑲	1210 40 000 521 80	Cocking ring spring	1	3-2	521	
•	1210 10 000 528 80	Cocking ring	1	3-2	528	
	1110 30 000 538 82	Retaining screw	1	3-1	538	
•	1210 30 000 539 81	Exposure control ring	1	3-1	539	
•	1210 30 000 540 80	Cover plate	1	3-1	540	
	1210 30 000 547 81	Threaded ring	1	3-1	547	
•	1210 30 000 552 81	Slotted cam ring	1	3-1	552	
	1210 30 000 559 81	Release spring	1	3-3	559	
•	1110 20 000 600 83	Contact nipple	1	3-8	600	
•	1110 40 000 604 84	Grounding element	1	3-8	604	
	1110 40 000 608 83	Contact stop	1	3-8	608	
	1110 10 000 612 82	M-contact lever	1	3-4	612	
	1210 30 000 614 80	M-contact lever spring	1	3-4	614	
	1210 10 000 615 81	X-contact lever	1	3-4	615	
	1110 30 000 616 82	M-adjusting element	1	3-4	616	
	1110 30 000 618 82	M-adjusting element screw	1	3-4	618	
	1110 30 000 619 81	M-cam check lever spring	1	3-4	619	
	1110 30 000 620 81	Bridge screw	1	3-4	620	
⑤⑦	1210 10 000 621 80	Bridge	1	3-4	621	
	1110 40 000 623 82	Rivet for MX-click stop spring	1	3-7	147	
	1210 40 000 623 80	Rivet for grounding element	1	3-8	623	
⑧	1210 40 000 627 80	M-anchor plate	1	3-7	627	
	1110 10 000 632 81	M-spur gear	1	3-4	632	
•	1210 10 000 635 80	M-detent	1	3-4	635	
	1110 40 000 640 81	Cocking lock spring	1	3-4	640	
	1110 30 000 641 83	M-detent spring	1	3-4	641	
⑧	1210 20 000 664 81	M-detent lock	1	3-7	664	
	1210 10 000 667 81	Release lock	1	3-3	667	
㊼	1210 30 000 669 81	Shutter speed lever	1	3-3	669	
	1110 30 000 671 81	Shutter speed lever screw	1	3-3	671	
	1210 30 000 672 82	Locking lever spring	1	3-4	672	
⑧	1110 40 000 696 85	M-cam check lever	1	3-7	696	

SPARE PARTS LIST
Special shutters for

	Stock No.	Description	Qty.	Illustration		Type
				Figure	No.	
×	1110 10 230 101 81	Casing	1	3-8	101	CS-1110-230 Xenar/Tessar/Planar 3.5/75 Rolleiflex 6x6
△		Screw-on ring	1	-	-	
⑤	1110 50 230 108 82	Diaphragm ring	1	3-8	108	
	1110 10 230 148 80	Setting ring	1	3-8	148	
×	1110 10 230 201 81	Base plate	1	3-7	201	
	1110 10 230 508 81	Release	1	3-3	508	
B	1112 10 000 517 80	Cocking pinion	1	3-2	517	
	1110 50 230 528 80	Cocking ring	1	3-2	528	
	1110 30 230 539 80	Exposure control ring	1	3-1	539	
	1110 30 548 540 80	Cover plate	1	3-1	540	
	1110 30 230 552 82	Slotted cam ring	1	3-1	552	
	1110 20 548 600 83	Contact nipple	1	3-8	600	
	1110 10 010 635 80	M-detent	1	3-4	635	
	1110 30 230 671 80	Shutter speed lever screw	1	3-3	671	
	Remaining parts as under 1110-000					
	1110 50 236 108 80	Diaphragm ring	1	3-8	108	CS-1110-236 Xenotar 3.5/75 Rolleiflex 6x6
	Remaining parts as under CS-1110-230					
×	1110 10 231 101 82	Casing	1	3-8	101	CS-1110-231 Xenar 3.5/75 Rolleicord V 6x6
△		Screw-on ring	1	-	-	
①	1110 50 231 108 82	Diaphragm ring	1	3-8	108	
	1110 10 231 148 81	Setting ring	1	3-8	148	
	1110 10 231 508 82	Release	1	3-3	508	
C	1110 10 000 517 82	Cocking pinion	1	3-2	517	
	1110 50 230 528 80	Cocking ring	1	3-2	528	
	1110 30 230 539 80	Exposure control ring	1	3-1	539	
	1110 30 231 540 81	Cover plate	1	3-1	540	
	1110 20 548 600 83	Contact nipple	1	3-8	600	
	1110 10 439 635 80	M-detent	1	3-4	635	
	Remaining parts as under 1110-000					

Table 8-4

Table 8-4 Cont. SPARE PARTS LIST
Special shutters for

		Stock No.	Description	Qty.	Illustration Figure	Illustration No.	Type
	×	1210 10 275 101 82	Casing	1	3-8	101	For shutters with a drive slot on the exposure control ring CS-1210-275 Sonnar 4.0/135 Tele Rolleiflex
	Δ		Screw-on ring	1	-	-	
		1210 50 275 108 80	Diaphragm ring	1	3-8	108	
		1210 10 275 148 84	Setting ring	1	3-8	148	
(47)	×	1210 10 275 201 82	Base plate	1	3-7	201	
		1210 10 275 508 83	Release	1	3-3	508	
	B	1210 10 000 517 80	Cocking pinion	1	3-2	517	
		1210 10 275 528 81	Cocking ring	1	3-2	528	
		1210 30 275 539 80	Exposure control ring	1	3-1	539	
		1210 30 275 540 80	Cover plate	1	3-1	540	
		1210 30 275 552 82	Slotted cam ring	1	3-1	552	
		1110 20 548 600 83	Contact nipple	1	3-8	600	
		1210 10 010 635 81	M-detent	1	3-4	635	
		1110 30 230 671 80	Shutter speed lever screw	1	3-3	671	
	×	1210 10 275 101 82	Casing	1	3-8	101	For shutters with a drive pin on the exposure control ring CS-1210-276 Xenotar/Planar 2.8/80 Rolleiflex 2.8 6x6
	Δ		Screw-on ring	1	-	-	
		1210 50 276 108 80	Diaphragm ring	1	3-8	108	
		1210 10 276 148 80	Setting ring	1	3-8	148	
(47)	×	1210 10 275 201 82	Base plate	1	3-8	201	
		1210 10 275 508 83	Release	1	3-3	508	
	B	1210 10 000 517 80	Cocking pinion	1	3-2	517	
		1210 10 275 528 81	Cocking ring	1	3-2	528	
		1210 30 276 539 80	Exposure control ring	1	3-1	539	
		1210 30 275 540 80	Cover plate	1	3-1	540	
		1210 30 275 552 82	Slotted cam ring	1	3-1	552	
		1110 20 548 600 83	Contact nipple	1	3-8	600	
		1210 10 010 635 80	M-detent	1	3-4	635	
		1110 30 230 671 80	Shutter speed lever screw	1	3-3	671	
	Δ		Screw-on ring	1	-	-	CS-1110-235 Xenar 3.5/60 Rolleiflex 4x4
		1110 50 235 108 81	Diaphragm ring	1	3-8	108	
		1110 10 235 148 82	Setting ring	1	3-8	148	
		1112 10 341 163 81	Shutter speed coupling ring	1	6-2	163	
	B	1110 10 135 517 80	Cocking pinion	1	6-2	517	
		1110 30 135 539 81	Exposure control ring	1	3-1	539	
		1110 10 235 590 80	Diaphragm coupling ring	1	6-2	590	
		1110 30 235 722 81	Slip-on pinion	1	-	-	
		Remaining parts as under 1110-010					

Table 8-4 Cont. SPARE PARTS LIST
Special shutters for

	Stock No.	Description	Qty.	Illustration Figure	Illustration No.	Type
×	1110 10 226 101 80	Casing	1	3-8	101	CS-1110-226 Tessar 3.5/75 Rolleiflex T 6x6
Δ		Screw-on ring	1	-	-	
	1110 50 226 108 81	Diaphragm ring	1	3-8	108	
㉛	1110 10 226 148 82	Setting ring	1	3-8	148	
	1110 40 010 153 83	Contact support rivet	2		153	
×	1110 10 226 201 81	Base plate	1	3-7	201	
	1110 10 010 508 82	Release	1	6-2	508	
⊟	1112 10 000 517 80	Cocking pinion	1	3-2	517	
	1110 10 226 528 80	Cocking ring	1	3-2	528	
	1110 10 226 539 80	Exposure control ring	1	3-1	539	
	1110 30 548 540 80	Cover plate	1	3-1	540	
	1110 30 230 552 83	Slotted cam ring	1	3-1	552	
	1110 20 010 601 81	Contact support	1	3-8	601	
	1110 40 010 604 83	Grounding element	1	3-8	604	
	1110 40 010 610 81	Shim for contact support	1	-	-	
	1110 10 010 635 80	M-detent	1	3-4	635	
	Remaining parts as under 1110-000					
	1110 50 240 108 80	Diaphragm ring	1	3-8	108	CS-1110-240 Xenotar 3.5/75
	1110 10 226 148 82	Setting ring	1	3-8	148	
	Remaining parts as for CS-1110-226					
㉘	1210 30 702 004 80	Screw for cover plate	4		004	CS-1110-238 Xenotar 3.5/75
×	1110 10 238 101 84	Casing	1		101	
	1110 50 238 108 83	Diaphragm ring	1		108	
	1110 10 238 148 80	Setting ring	1		148	
	1110 10 238 174 82	Retaining plate	1		174	
⊟	1110 10 000 517 83	Cocking pinion	1	6-2	517	
	1110 10 238 528 80	Cocking ring	1	3-2	528	
㉘	1110 30 000 538 82	Retaining screw	1	3-1	538	
㉗	1110 10 238 539 82	Exposure control ring	1		539	
㉗ ㉘	1110 10 238 540 82	Cover plate	1	3-1	540	
㉗ ㉘	1110 10 238 540 84	Cover plate	1		540	
㉘	1110 30 000 547 82	Threaded ring	1	3-1	547	